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MARCH 19, 1951
VOLUME 40, No. 6

AMERICAN DYESTUFF REPORTER

DEVOTED TO TEXTILE CHEMISTRY · BLEACHING · DYEING · PRINTING · FINISHING

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Du Pont vat dyes produce outstanding all-round fastness to laundering, sun, perspiration or dry cleaning.

You have a wide choice of shades with deep penetration, uniformity and brilliance—in Du Pont PONSOL* and LEUCOSOL* (anthraquinone-type dyes) and SULFANTHRENE* (indigoid and related dyes). Our Technical Staff will be glad to assist you in choosing the right dye—and the right method of application—for all of your fabrics. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Delaware.

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Always dye with an eye to the end use

Du Pont Dyestuffs

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

IMPROVED
Emery Twitchell Oils For SANFORIZED FABRICS

Now...Emery Twitchell Oils 7240 and 7250 Give You 4 Extra Advantages

1. **IMPROVED COLOR and ODOR STABILITY...** will not yellow or stain fabrics. Cannot turn rancid on fabrics during storage.
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3. **INCREASED RESISTANCE TO SALTING OUT...** compatibility with finishing additives such as salts and other weighting agents is improved considerably.
4. **GREATER REWETTING ABILITY...** Faster rewetting increases fabric throughput . . . gives greater overall production efficiency during compression shrinkage. More uniform rewetting results in uniform shrinkage.

In addition to the major improvements listed above, these new Emery Twitchell Oils provide the following characteristics:

FIBER LUBRICATION—The excellent lubrication characteristics provide for easy and uniform rearrangement of the fibers during the preshrinking of fabrics. Prevent sticking at the shoes, enable increased processing efficiency.

REWETTING—High rewetting speeds for faster processing and uniform rewetting of fabrics. Treated fabrics retain rewetting properties indefinitely.

SOFTNESS—For various fabrics and finishes, Twitchell Oils provide the different degrees of softness required to meet specific needs.

CHOOSE THE TWITCHELL OIL WHICH BEST MEETS YOUR REQUIREMENTS

PRODUCT	FIBER LUBRICATION	REWETTING	SOFTNESS	STAINING
Twitchell 7250	Very Good	Fastest	Softest	None
Twitchell 7240	Excellent	Fast	Moderate	None
Twitchell 7231	Excellent	Medium	Slight	None

For a recommendation to fit your particular need, contact our Sales Service Department.

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for every need
A.A.P. was the first successful U. S. producer of dyes designed specifically for acetate fibres, and its constant stress on quality has made and kept AMACELS the top-ranking favorites in this field. New, improved AMACELS provide a popular range of colors for dyeing acetate fibres of every type. Listed below are a few of the reasons so many leading acetate dyers rate these colors tops for quality and reliability.
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EXCELLENT FASTNESS to light, gas fading, sublimation, decatizing.
"PLUS" ADVANTAGES of simplified application—consistent shade purity—good "pile on"—level dyeing.
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(No matter how you make them, you need detergents.)

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Chrome Brown PGC
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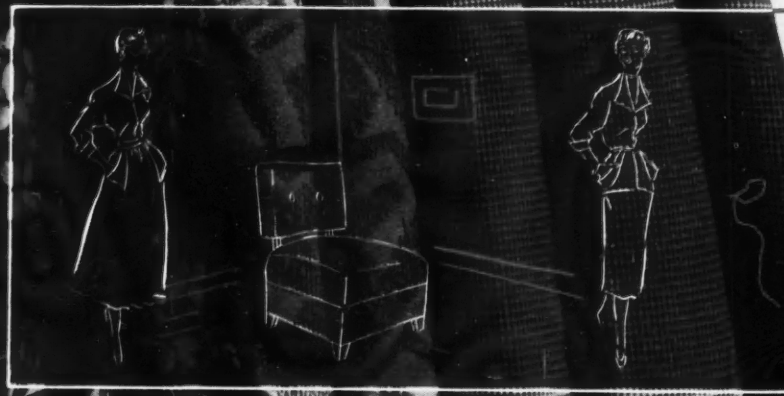
Without Aftertreatment!

This color is the first of a new range of Atlantic direct dyestuffs containing copper complexes as an integral part of the dye molecule. Since the copper complexes, which produce superior light and washing fastness, are already a part of the dyestuff, costly aftertreatment becomes unnecessary.



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	PRODUCT	CHEMICAL CLASSIFICATION	PROPERTIES AND USES
COMBINED DETERGENCY & WETTING POWER	CERFAK	Alkyl aromatic sulfonate Anionic—(Flake Type)	Used over full pH range for detergency and/or wetting. Also for compounding cleaning agents.
	CERFAK 1300	Polyoxyethylenealkyl thioether—non-ionic (Liquid)	Combined detergent and wetting agent, effective over full pH and temperature range at low concentrations. Okay in hard or soft water. Fine for raw wool scouring and cotton piece goods.
	CERFAK 1301	Blend of selected non-ionic agents (Liquid)	Excellent for scouring and dyeing woolen and worsted yarns and piece goods. Generally applicable as a detergent.
	CERFAK N-100	Amine condensate (Liquid)	Combined detergency and wetting action. Use with low per cent of alkali. Good for all types of alkaline scouring. Excellent dye bath leveler.
	CERFAK 453	Blend of selected anionic and non-ionic agents (Liquid)	Moderately priced surface active agent. Stable in bleach baths. Will not affect enzymes used in desizing. Non-staining. Wide pH effectiveness. Rapid wetting speed, excellent rewetting ability, good scouring ability. Specially adapted for fabrics to be "Sanforized"
WETTING & REWETTING	SURFAX 1288	Alkylaroyl sulfopropionic ester (Liquid)	Concentrated wetting and rewetting agent. Used in neutral or mildly alkaline solutions. An exclusive Houghton research development.
	SURFAX W. O.	Sulfated fatty ester (Liquid)	Combined penetrant, softener, wetting and rewetting agent. Recognized in textile industry as a standard of comparison.

"WHICH Surface active agent shall I use in my wet processing?"

That is a sensible question, because textile mill men might well be confused. Choosing one out of some 700 surface active agents for a specific application is no simple task! Yet it is essential to find just the *right* one that will do the best job, most economically. Nearly every surfactant combines detergent, wetting, and rewetting qualities in some measure—but usually *one* of these properties is dominant. The chart above will help you differentiate between Houghton's seven agents which cover the field so well. And to make another point clearer, let's differentiate between the two Houghton trade names, too . . .

USE "CERFAK" when *detergency* is the chief factor in your processing. Each of these five "Cerfak" products, however, were developed after considerable study for particular processing jobs in the textile industries. This wide range permits you to pick the one that fits the job best and reduces your processing costs.

USE "SURFAX" when exceptionally good *wetting and rewetting agents* are needed because they possess little or no detergent advantages. "Surfax" means topnotch *wetting* action, also provides necessary wet-back properties for compressive shrinkage of fabrics.

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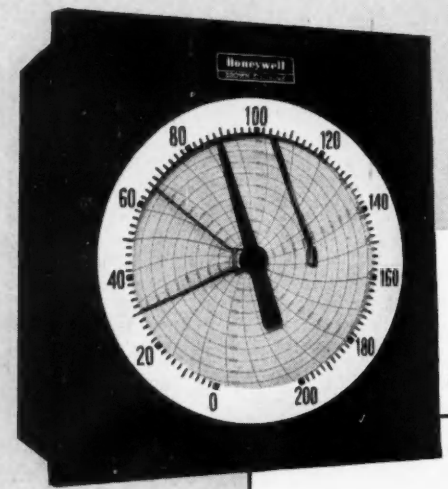
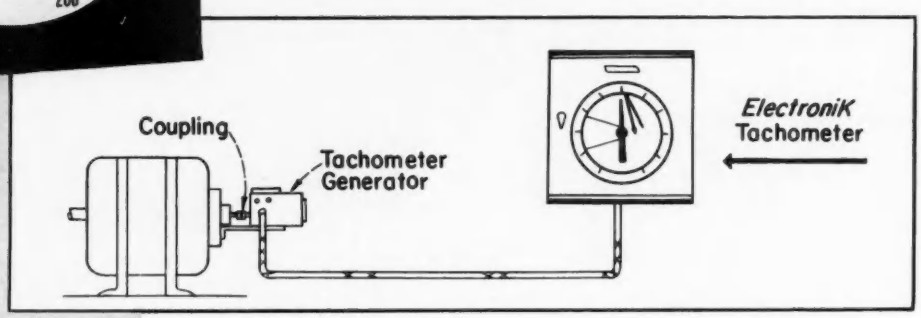


... with the

ElectroniK TACHOMETER RECORDER



THE *ElectroniK* Tachometer provides management with a constant and accurate record of machine operation . . . a visual guide for synchronizing elements of any range so that rates of flow between the elements can be established and maintained. It is an automatic recorder of facts for operation study wherever machine speed is a factor . . . affording production analysis at a glance.

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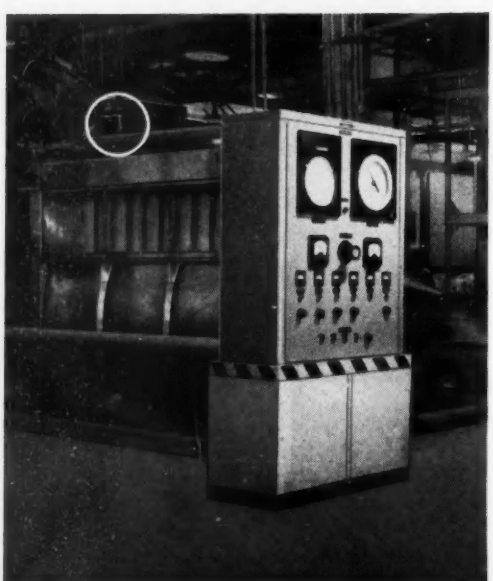
● *ElectroniK Tachometer and generator (circled) applied to a continuous bleach range washer.*



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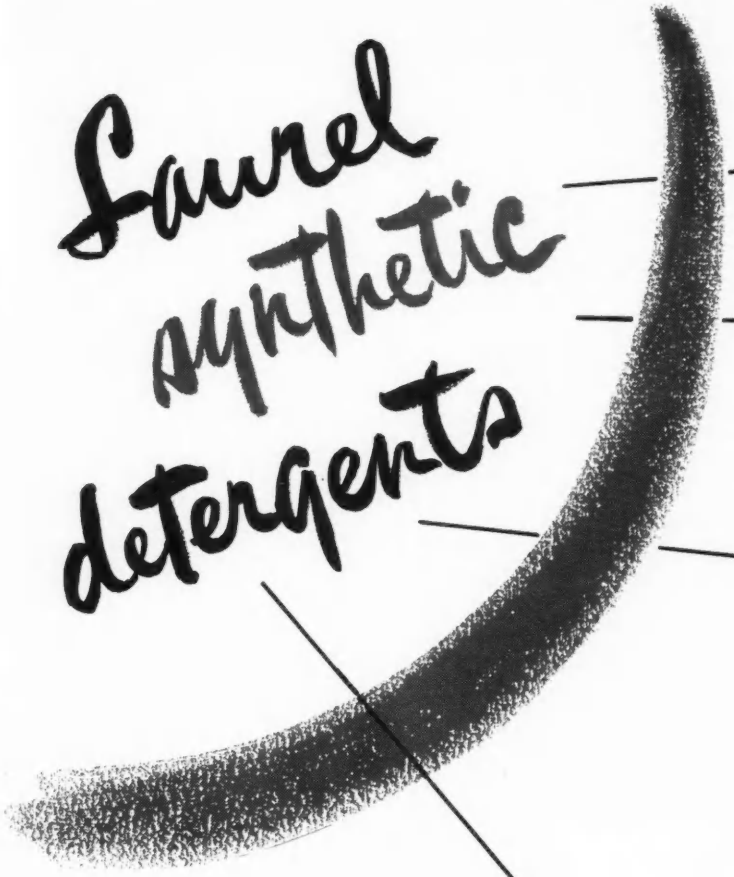

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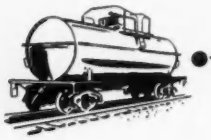

2. Modern equipment for loading and shipping to maintain that purity from our plant to the user's plant . . .

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An experienced technical service staff to help you use and handle caustic soda.

To you this means minimum processing costs through elimination of variations in quality from shipment to shipment. To make sure that Hooker Caustic reaches you as pure as it leaves us, we coat Hooker tank cars with a special protective lining. Each car is completely insulated and equipped with a heating device to make handling and unloading uniform the year around.

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For analyses and specifications on Hooker Caustic Soda, write on your business letterhead for Technical Data Sheet No. 735.

Hooker Caustic Soda is sold in solid, flake or liquid form. Liquid is supplied in 50% and 73% concentration.

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Crisp and magnetic colors

can transform a simple frock into a Cinderella Gown.
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print **brighter** colors with this new, non-corrosive, acid-forming catalyst

Now you can print brighter, sharper, clearer colors on silk, cotton, rayon and linen with vat soluble ester printing pastes . . . if you use Pfizer Ammonium Gluconate as the acid-forming catalyst.

This stable, non-toxic, non-corrosive salt reacts upon steaming to yield an efficient, non-volatile medium. Brilliant prints result from the ability of Ammonium Gluconate to:

1. **make more stable pastes.**
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3. **develop greater color value.**

Pfizer Ammonium Gluconate is available as a dry, free-flowing, odorless, readily soluble powder in 50 and 100-lb. drums and in 250-lb. barrels. Write today for samples, prices and Technical Bulletin No. 6.

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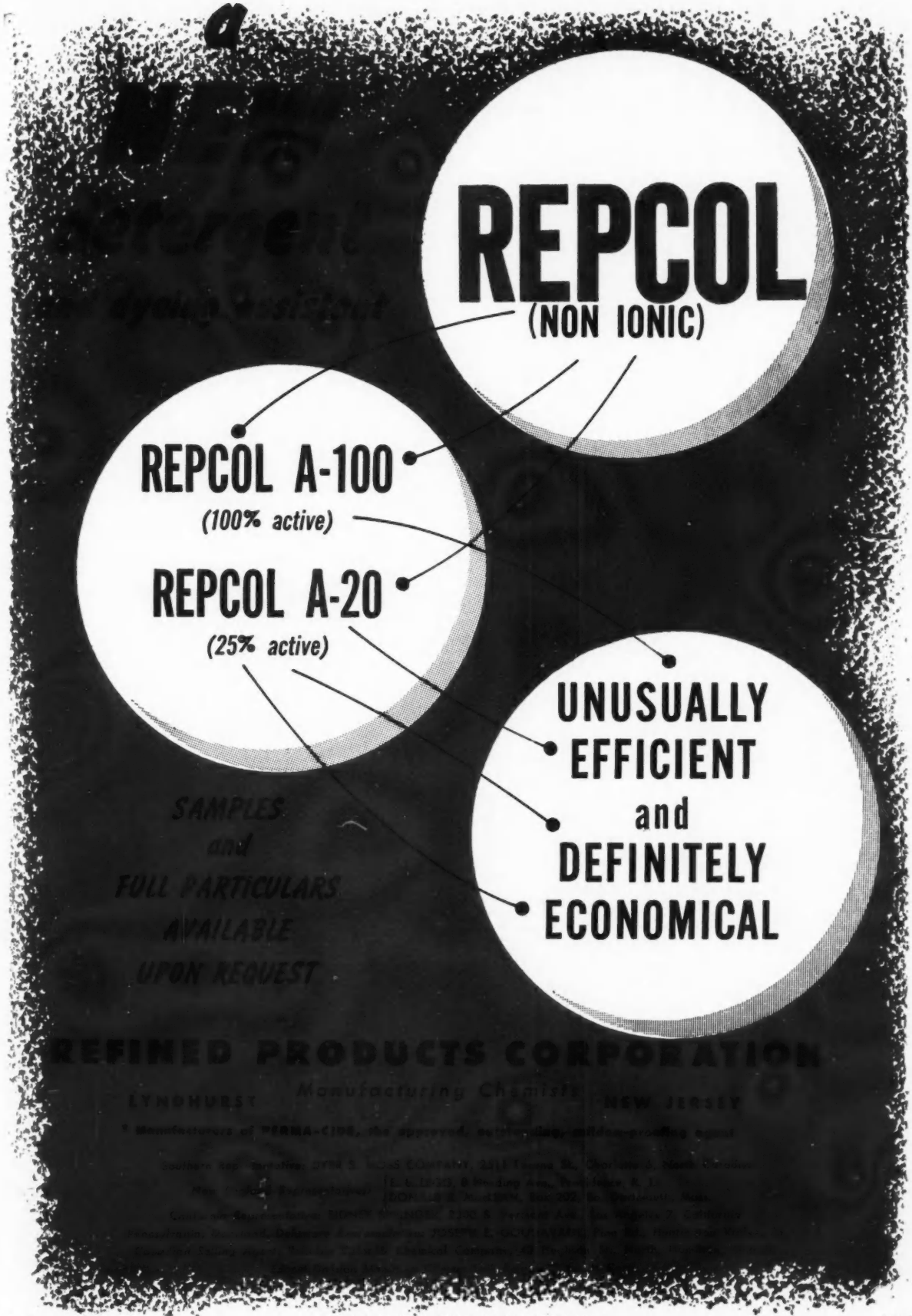
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UNUSUALLY
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and
DEFINITELY
ECONOMICAL
SAMPLES
and
FULL PARTICULARS
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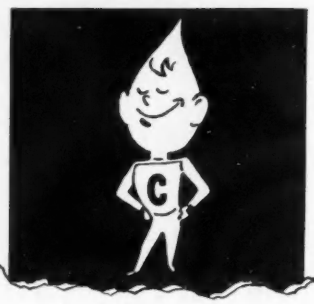
LYNDHURST Manufacturing Chemists NEW JERSEY

NOTORIOUS PIRATE RING SMASHED BY "CAL" GON!

The wool scouring department was the scene of the dastardly attack!

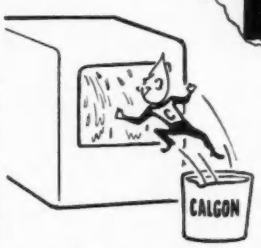


CAL GON, descendant of the "Glassy" Phosphate family, was called in. While waiting to perform his duties, his glassy eyes focused on a dolly washer, with the water surging up in its great tub.

CAL STRETCHED his long spine of alternating phosphorus and oxygen atoms, yawned, and made practice grabs at imaginary calcium ions as he waited to be tossed into the rising tide.

With a shudder, Cal saw the foreman send the dolly washer on its way without him. The piratical calcium ions surrounded the soap, grabbed big lumbering ions of fatty acid in their valences and made off with their prizes. Some rushed to hide in the interstices of the fabric, creating an incredible mass.

CAL SHOUTED. He rocked his confining ceramic crock to get to the rescue. But his supersonic shrieks were in vain. The woolens were wallowing in a sea of unsightly clots of wreckage when the foreman hove to the side of the washer. "What a mess! Well, Cal, here's your chance. Let's see you clean out this pirate ring infesting our every day routine."



CAL LEAPED into the churning water in an adjacent dolly washer. He fought his way through the waves, was carried up by the cloth and plunged down again, collaring calcium ions and magnesium ions right and left. He blocked the calcium ion's struggle to get the soap and nondescript array of soil particles. The fatty acid ions gulped up the soil particles as Cal Gon stood off the pirate horde. Cal sloshed up and down merrily with the fabrics until every metal ion had been captured and he had cleared the murky fog created by those pirates to hide their foul deeds.

"I'M NOT THROUGH YET," said Cal Gon to the happy foreman. "Rinse me out of here with some warm water. There are a few more pirates lurking in the rinse—let me in to take care of them, too."

THE NOTORIOUS Pirate Ring was smashed, and Cal Gon's fame for creating peace in the water world grows more and more.

CALGON *is the registered trade mark of Calgon, Inc., for its glassy phosphate products.*

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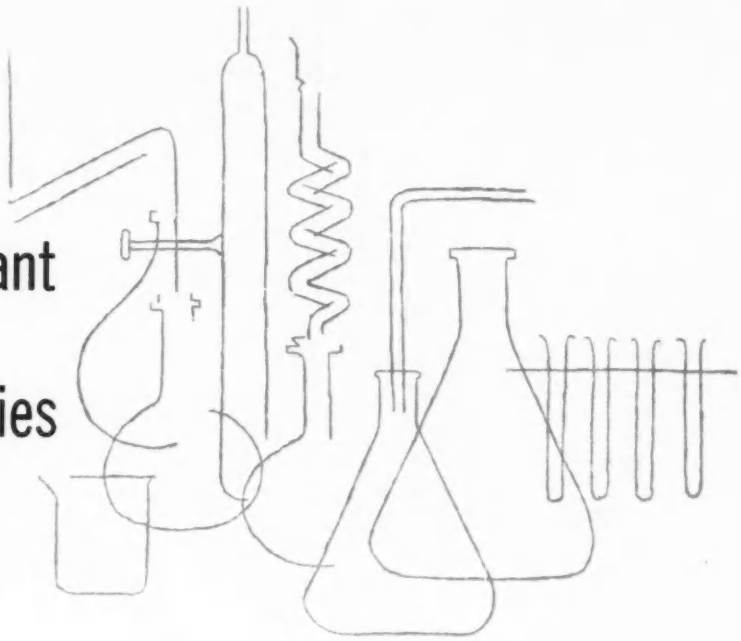

Warwick technical advisors, with their wide knowledge of textile chemicals and processes, are available for consultation.

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APPRAMINE* cationic softeners
APPRETOLE* anionic softeners
EUMERCIN* mercerizing assistants
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IMPREGNOLE* and NORANE* water repellents
LANOLE* tar and grease removers
ORGANOSOL coatings for textiles and paper
PLASTISOL for coating and molding
SETOLE* textile resins
SULFANOLE* synthetic detergents
WARCOFIX* color fixatives
WARCO GFI* gas fading inhibitor
WARCOLENE* finishing oils
WARCONYL* fire retardants
WARCOSAN* wetting and rewetting agents
WARCOSOL* penetrants
WEAVE-LOK* non-slip finish

SUNTONE*
pigment printing colors for textiles and plastics

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for
crush resistance
and
dimensional
stability

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April, June and November;

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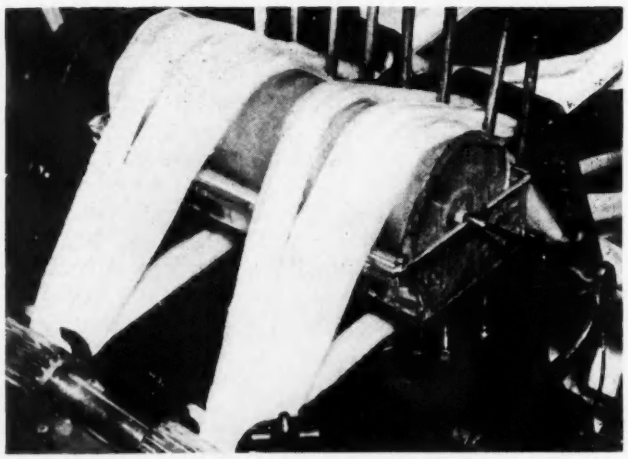

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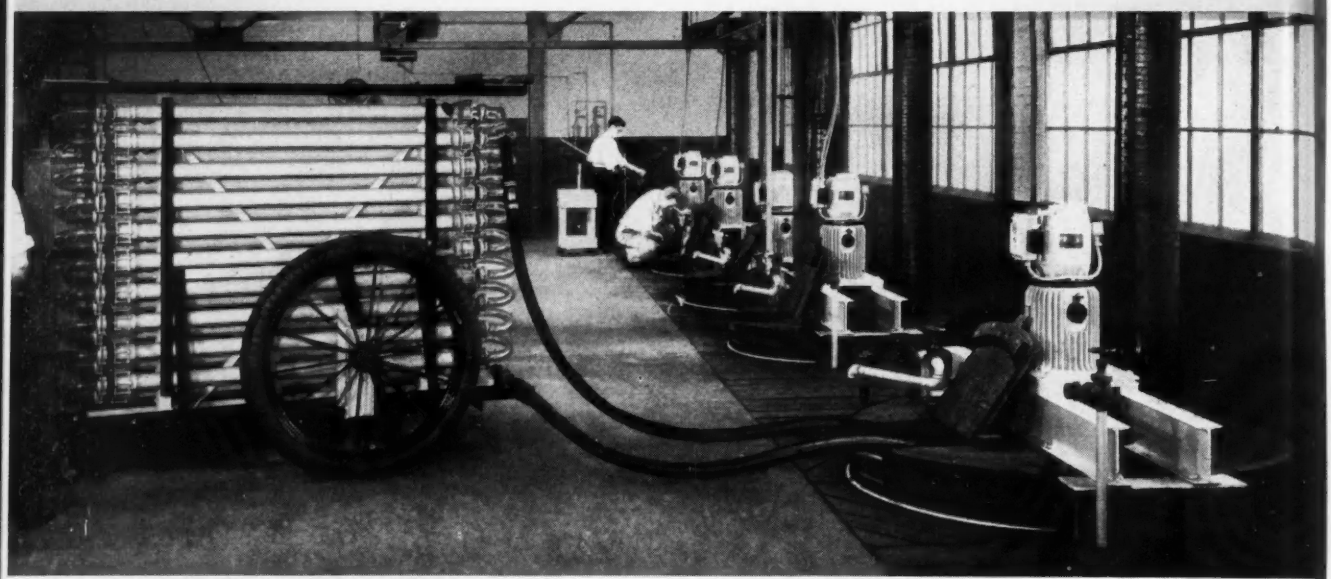

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Wool Group——

STRIPPING OF WOOL DYES WITH PROTECTION AGAINST CHEMICAL DAMAGE*

E A LEONARD AND L BECK
Alexander Smith & Sons Carpet Company
Yonkers 1, N Y

This paper describes a commercial method of stripping dyes from wool without the chemical degradation usually experienced. The mechanism by which this is accomplished is to split the disulfide linkages and rebuild them with ethylene dibromide, which forms a new linkage more resistant to reduction.

The effectiveness of this protective modification is shown by data on wool fiber strength, alkali solubility, and an abrasion test on pile floor coverings. Application of the recording spectrophotometer to quantitative measurement of dye removal is discussed and illustrated. Variations of the protective stripping process are described relative to their effectiveness on particular dyes.

INTRODUCTION

THEORY OF STRIPPING WITH CONTROL OF CHEMICAL DAMAGE——In 1947 Harris and Brown explained a theory of disulfide-linkage hydrolysis to account for wool damage during ordinary stripping and described reactions by which ethylene dibromide may be used to replace split sulfur linkages *(1)*.

To review this matter briefly the reaction of wool with sodium hydrosulfite in the presence of alkali may be indicated to break the structure:

$$(1)\quad \text{R-S-S-R} \xrightarrow[\text{OH}^-]{\text{Na}_2\text{S}_2\text{O}_4} \text{R} - \text{SH} + \text{Na-S-R} + \ldots\ldots\ldots\ldots$$

Here R indicates the remainder of the wool chemical structure.

It is common knowledge that wool suffers a deterioration of physical properties when sulfur linkages are extensively ruptured. This is indicated by brittleness and by loss of strength and abrasion resistance. According to Alexander, sulfur linkages may occur in the main chain of the wool structure as well as in cross linkages and side chains *(2)*, which emphasizes the importance of this grouping to the physical properties of the fiber.

Harris stated that the undesirable phenomena mentioned above can be avoided by stripping in the presence of ethylene-dibromide emulsion, which replaces the original linkage by one somewhat different:

$$(2)\quad \text{R-S-S-R} \xrightarrow[\text{Br-CH}_2\text{-CH}_2\text{-Br}]{\text{Na}_2\text{S}_2\text{O}_4 + \text{OH}^-} \text{R-S-CH}_2\text{-CH}_2\text{-S-R} + \ldots\ldots\ldots\ldots\ldots$$

He showed data on tensile strength of the fiber, harshness of hand, and differences in alkali solubility to support the evidence of relinking due to ethylene dibromide. The data that follow further substantiate Harris' hypothesis and describe the commercial application of sulfur-linkage modification to wool stripping.

PRACTICAL APPLICATION OF THE HARRISTRIPPING PROCESS

ABRASION RESISTANCE OF WOOL-PILE FLOOR COVERINGS —— The Bureau of Standards wear tester for carpets has been shown by Schieffer to rank durability of woolen carpets in accordance with service conditions *(3)*. As a consequence, many carpet manufacturers use this type of wear tester in research and development work.

E A Leonard

In the use of this machine, two plain wool carpets will exhibit relative durabilities proportional to their respective pile heights multiplied by the squares of their densities. "Durability" is defined in terms of residual pile thickness after any given number of abrasion cycles. To explain this by example, a carpet specimen with a pile twice as high as another, all other things being equal, will exhibit twice the durability of the thinner specimen. On the other hand, if two specimens have equal pile height, and one has twice the pile density of the other, the denser will last 4 times as long.

Should the wool from which one specimen is made have suffered damage, however, that specimen will yield less than the expected durability. The most common means of testing wool damage in relation to wear life among carpet manufacturers is to make two carpet specimens identical in construction; one is made with the wool in question and the other is made with untreated control wool or a standard wool. When carpets are tested in this manner, differences of durability are shown in curves relating residual pile thickness to thousands of cycles on the wear tester. The end point of a wear-

* Presented at the 29th Annual Convention in Portsmouth, N H, September 29, 1950. The process described may be licensed by arrangement with Alexander Smith & Sons Carpet Company.

TABLE I
CARPET WEAR TEST DATA ON VIRGIN WOOL AND FIBER STRIPPED BY TWO METHODS

Sample	*Unstripped*	*Harris-Stripped*	*Comm Stripped*
Wear Criteria	223	214	220
Wear Index	70K	74K	54K
Wear Per Unit Crit'n	314	346	246
Relative Wear Life	100%	110%	78%

test curve is arbitrarily defined as the abscissa corresponding to the point at which the specimen is worn to ¼ of its original crushed-pile thickness. (the intersection of the extrapolated curve with the y axis).

Since it is difficult to obtain two specimens of precisely identical constructions, relative wearing properties cannot be compared by direct inspection of the wear-test curves. To overcome this defect, the relative durabilities are calculated on a unit criterion basis for both specimens. Table I shows the relationship between untreated wool, normally stripped wool, and stripped wool protected by ethylene dibromide.

Figure 1 shows the corresponding curves of thickness versus the thousands of revolutions from which the data in Table I were derived. The following conclusions are indicated:

1. Stripping with the regular commercial process entails approximately 25% wear loss in this particular case.
2. Stripping with ethylene dibromide protection shows no decrease in wear life. Based on only one sample, the 10% increase shown on the data may not be significant. Slight increases shown on repeat tests indicate, however, that there is a slight increase in the wear-life of wool protected by ethylene dibromide in stripping.

Harris has presented data *(1)* that compare fiber tensile strength and alkali solubilities of wools normally stripped against those stripped with ethylene dibromide. Figure 2 consists of similar data on carpet wools and corroborates his findings. The wool swatches shown in connection with this data indicate that, even with increased alkali solubility and decreased tensile strength, the regular commercial strip is not so effective from a color standpoint as the Harris stripping. This means that the effectiveness of a regular strip from the color standpoint must be limited in order to minimize the chemical damage imparted to the wool.

PROCESS MODIFICATIONS AND THE EFFECTIVENESS OF COLOR REMOVAL———In general a dyestuff being stripped may take any of the following courses during the process:

1. Strips to a complete white, that is, leaves no residual color at all.
2. Strips to a lighter weight of the same color.
3. Strips to a product having a different color.
4. Strips to a colorless base, which re-oxidizes on removal from the bath to the original color. This applies particularly to vat dyes.

The examples to be described here illustrate some of these possibilities.

Figure 3 shows a brown mix dyed with red, yellow and blue primaries and the results of stripping by two modifications of the Harris process. Spectrophotometer reflectances are stated, in each case referring to the dominant absorption wave lengths of the primary dyes used. 440 mμ refers to the absorption wave length of Colour Index 640, a yellow dye commonly known under the name of Tartrazine. 520 mμ refers to the absorption of a mixture of Colour Indices 30 and 31 (Fuchsine and Phloxine). 640 mμ applies to Colour Index 1054, commonly identified as Anthraquinone Blue B or Alizarine Sapphire. All the dyes represented are common acid colors for wool.

It will be noted in Figure 3 that Process A strips the mixture to a pale grey shade and Process B reduces it to a violet pink. It is indicated that at least one of the components strips to a product of different color, or else that 2 or more of the components strip to a lighter shade instead of a white. To answer this question, Figures 4, 5, and 6 show corresponding strips on the component dyes used to make the brown in Figure 3. It will be observed that Yellow 640 and Red 31/30 strip to a white. Blue 1054 does not do so, however, and with Process A strips to a grey that corresponds closely to the final shade of the brown stripped by the same process. Process B produces a violet pink that closely agrees with the strip of the compound shade. It is thus demonstrated that the residual color obtained by stripping the brown shade is due to a stripping resist of Blue 1054.

It is possible to calculate the percentage of dye removal for Yellow 640 and Red 31/30 by converting changes in reflectance at the dominant wave length to changes in K/S values and then to use the spectrophotometer tables for converting into changes of dyestuff concentration on the fiber. By this technique the quantitative removal of dyestuff as a percentage of the amount originally present on the fiber can be determined. For Red 31/30 and Yellow 640 the removal is essentially 100%.

This technique cannot be applied to Blue 1054, however, because it strips to a product having a different color from the original, that is, the dominant wave

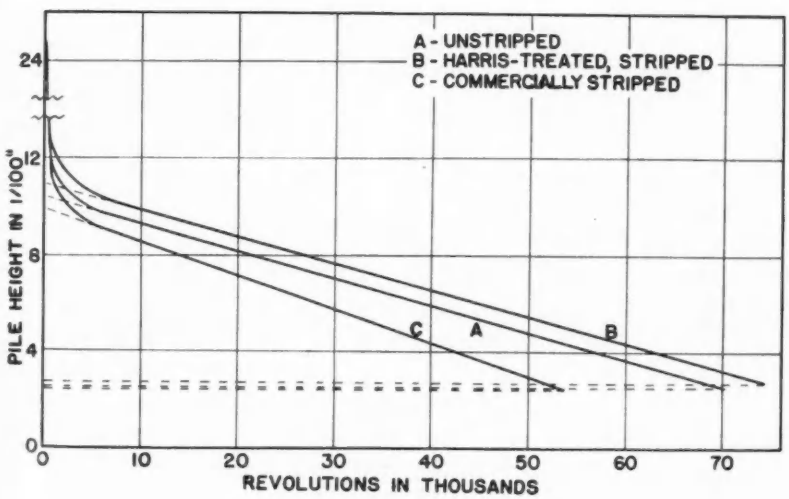


Figure 1
N3S Wear-Test Curves on Carpet Samples

ALKALI SOLUBILITY AND FIBER STRENGTH CHANGES
VIRGIN WOOL

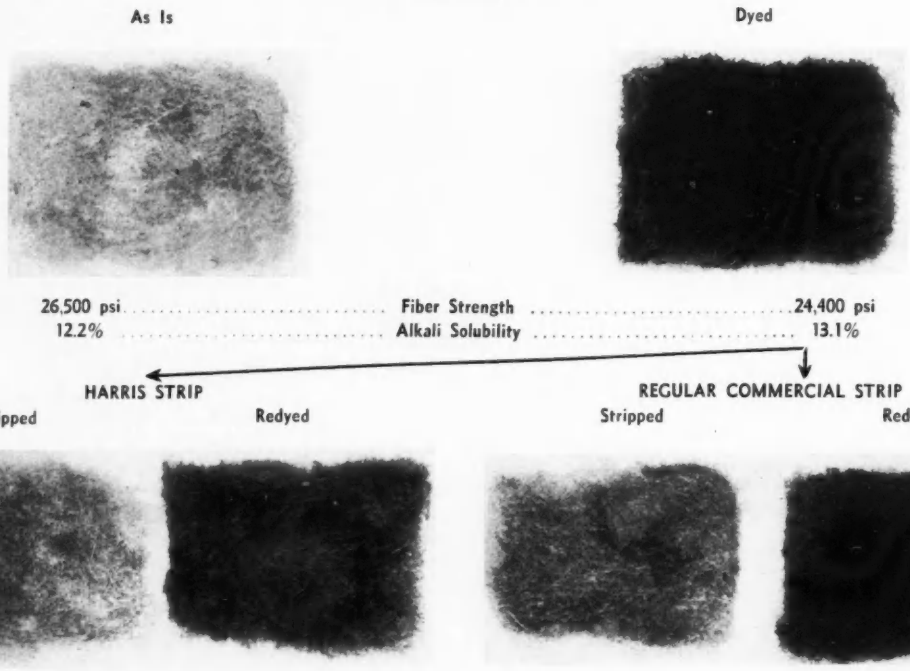
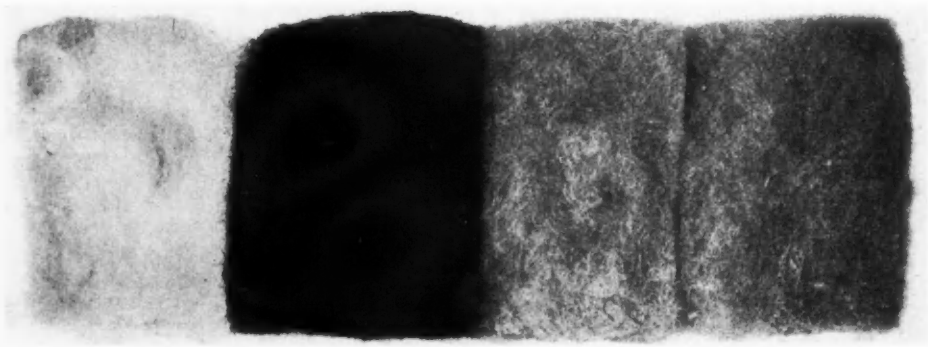


Figure 2
Comparison of Stripping Methods as to Effect on Alkali Solubility and Fiber Strength

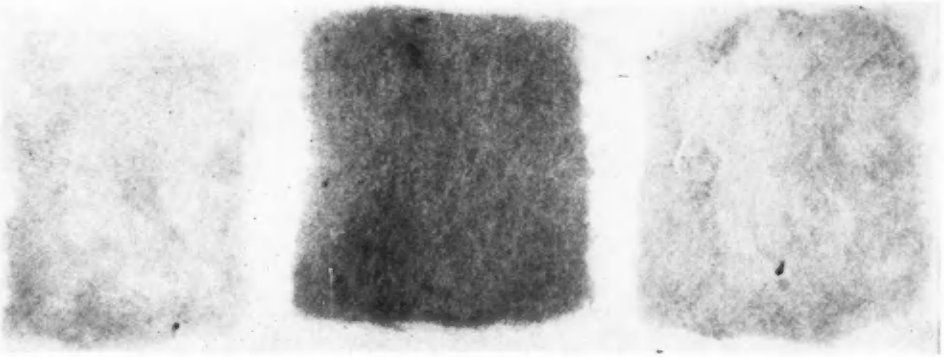
YELLOW, RED AND BLUE



% Reflectance				
At 440 mμ	42.5	3.6	32.7	36.2
At 520 mμ	55.2	4.6	31.9	31.1
At 640 mμ	66.5	6.7	39.1	45.3

Figure 3
Protective Stripping of Brown Mix

YELLOW 640



% Reflectance			
At 440 mμ	42.5	4.3	38.3
At 520 mμ	55.2	36.5	55.5
At 640 mμ	66.5	56.8	67.4

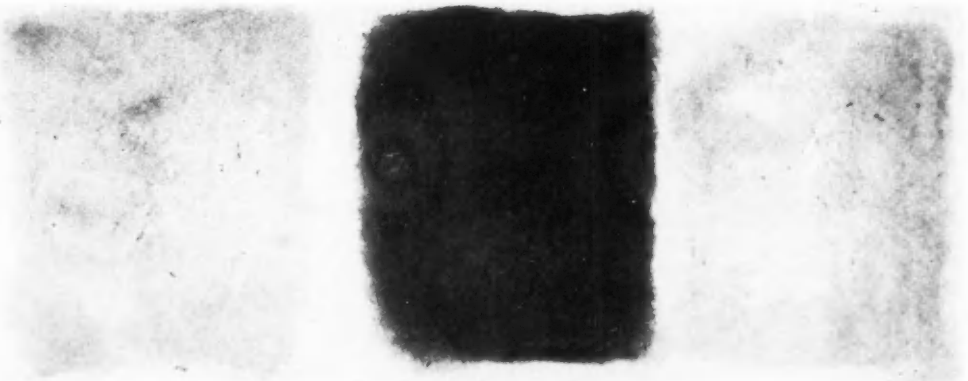
Figure 4
The Stripping of Colour Index 640

length changes and reflectance changes at the original dominant wave length of the blue dye are not indicative of the residual color. From an examination of the differences in reflectance values of 1054 stripped by Processes A and B the following conclusions can be made, however:

1. Process A leaves less residual yellowness and redness than Process B but the latter leaves less residual blueness.
2. For dyeing light shades, Process B is slightly more desirable since it leaves less yellowness in the fiber, yellowness usually being the limiting factor in matching light shades on wool.

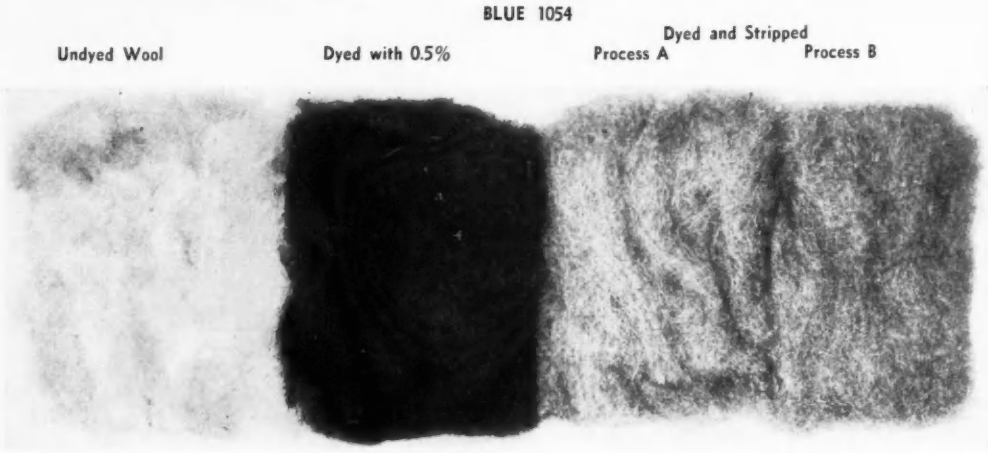
The difference between Processes A and B have not been mentioned. They consist of process modifications involving a change of stripping agent and conditions. Briefly, almost any process modification can be employed after the wool is first protected with ethylene dibromide in connection with the use of sodium hydrosulfite. After this step, other stripping agents can be applied. Process A involves the further application of sodium hydrosulfite, while Process B, for instance,

RED 30 AND 31



% Reflectance			
At 440 mμ	42.5	16.9	39.7
At 520 mμ	55.2	5.5	53.0
At 640 mμ	66.5	52.8	65.4

Figure 5
Stripping Properties of Colour Indices 30 and 31



% Reflectance				
At 440 mμ	42.5	23.7	31.8	29.4
At 520 mμ	55.2	15.6	27.1	24.1
At 640 mμ	66.5	5.8	32.5	35.7

Figure 6
Stripping Properties of Colour Index 1054

involves the use of basic zinc sulfoxylate formaldehyde. As another alternative, normal zinc sulfoxylate formaldehyde has been found to work more satisfactorily than hydrosulfites on Prototypes 188, 10, and 11. The basic zinc sulfoxylate formaldehyde gives somewhat superior results on some chrome dyes.

ECONOMICS, EQUIPMENT AND OTHER ASPECTS

MATERIALS COST AND PROCESSING TIME———In general it has been found that a variety of ordinary dyehouse equipment can be used for protective stripping. Hussong and Franklin kettles of both stainless steel and wood with bronze fittings have been used with equal success. Materials vary in cost from 2.5 to 4.0 cents per lb of wool, depending on the particular process modification employed. The time of processing in the kettle runs 1 to 1½ hours, again depending on the process modification employed. The stripped stock can of course be redyed immediately without being moved to another kettle.

It is highly desirable that the stock be as oil-free as possible before being stripped so as to insure no resistance to the stripping agents. If necessary it should be washed to remove oils, and this step has in many cases been found to increase greatly the effectiveness of stripping. In general it is advisable that the extractable oily content of the stock before stripping should not be over 2%.

EQUIPMENT CHANGES AND THE TOXICITY OF ETHYLENE DIBROMIDE———Ethylene dibromide possesses toxicity of a type common to halogenated aliphatic compounds of short chain length, such as trichloroethylene, carbon tetrachloride, chloroform, and perchlorethylene. The same protective measures are therefore indicated; that is, inhalation of the vapors should be avoided, as should prolonged contact of the liquid with the skin. To obtain this end, the dye kettle used for protective stripping should be enclosed and vented to the outdoors. On Hussong kettles a simple plywood enclosure with adequate forced-draft ventilation will do the job. Such a setup is shown in an article by M Ewing *(4)* and was laid out in accordance with requirements of, and approval by, the New York State Department of Health, Bureau of Industrial Hygiene. The kettles equipped as shown can produce 35-40,000 lb of stripped stock per week.

In addition to the venting equipment the operators should use solvent-proof gloves when handling the ethylene dibromide and should work in an area of adequate ventilation. Since ethylene dibromide has long been widely used as an additive to gasoline, the methods for its safe handling are well established.

CONCLUSIONS

The following points have been covered:

1. Data substantiating the claims of Milton Harris of the Harris Research Laboratories have been obtained on the retention of fiber strength and alkali solubility in stripped wool by protecting the wool with ethylene dibromide during stripping.
2. It has further been shown that this protection applies also to the abrasion resistance of pile fabrics as demonstrated by application of the wear tester of the National Bureau of Standards to carpets.
3. The evaluation of stripping effectiveness on single and compound shades has been discussed, and application of the recording spectrophotometer has been mentioned.
4. Possible modifications of the protective stripping process have been discussed, relative to their effectiveness on certain dyes.
5. It has been mentioned that the process can be used on a variety of equipment.
6. The economics, processing time and equipment modifications have been noted.

BIBLIOGRAPHY

(1) Harris and Brown, "New Developments in the Chemical Modification of Wool" *Am Dyestuff Reptr* 36, P316 (1947).

(2) Alexander, "The Chemical Reactivity of Wool in Relation to Antishrink Processes" *Am Dyestuff Reptr* 39, P420 (1950).

(3) Schieffer, "Wear Testing of Carpets," *Research Paper RP* 1505, *National Bureau of Standards* 29 (1942).

(4) Ewing, "The Harris Color Stripping Process," *Textile Inds* 114, P99 (1950).

CATALOG OF TEST EQUIPMENT AND MATERIALS AATCC

INTRODUCTION

This *Catalog of Test Equipment and Materials* is published as a ready reference for information concerning test apparatus, fabrics and supplies in which the Association has direct interest.

There is first presented a list of apparatus, standards, fabrics and supplies with prices and sources. There then follows in the same order a brief description and the purpose of each item listed, references to the literature and an illustration if one is available.

Additions to this *Catalog* will be published as new test equipment becomes available or as price changes may occur.

Requests for additional information concerning the materials listed or the test procedures for which these test materials are intended should be addressed to Dr H W Stiegler, Director of Research, AATCC National Headquarters, Lowell Textile Institute, Lowell, Massachusetts.

This catalog will subsequently be published as a reprint, copies of which will be available from the Secretary, Dr H C Chapin, Lowell Textile Institute, Lowell, Massachusetts.

PRICE LIST and SOURCES OF SUPPLY

(Prices as of February 1, 1951. Subject to change without notice as approved by price fixing authorities.)

	Price	Source of Supply
Atmospheric Fading of Dyed Acetate		
Test Apparatus, blueprint of	1.00	1
Test Apparatus	Price on request	5
Fading Standards; 20 yds of dyed acetate ribbon and a swatch of the "Standard of Fading"	2.50	2
Color-Transference Evaluation Chart	2.50	1
Cotton Skeins; standard for Draves Wetting Test		2
100 5-g skeins	5.00	
500 5-g skeins	23.00	
1000 5-g skeins	45.00	
Crockmeters		1
Standard model	20.00	
Special model (counting device attached)	32.00	
Crockmeter Cloth, 96 x 100, 4.10 yds/lb combed cotton lawn		1
2" x 2" squares, per 1000	3.00	
Piece goods, per yard	.75	
Detergency Comparator	Price on request	3
Fabric for Evaluation of Insect-Pest Deterrents, per square yard	4.00	
Fire Resistance Test Apparatus, Blueprints of	1.00	1
Flammability Test Apparatus (Flash fire)	Price on request	5
Knitted Worsted Tubing (Launder-Ometer tests), per yard	.40	1
Light, Colorfastness to		
Standards, set of seven dyeings	2.00	1
Fade-Ometer	Price on request	4
Multifiber Test Fabrics		2
Six-fiber cloth (wool, viscose rayon, spun silk, bleached cotton, cellulose acetate and nylon), per yard	4.50	
Three-fiber cloth (bleached cotton, cellulose acetate, and wool), per yard	3.50	
Perspirometers		6
Stainless-steel shaft and face	170.00	
Additional specimen racks, each	70.50	
Washing, Colorfastness to		
Test Standards		1
Cotton	1.00	
Wool	1.00	
Silk	1.00	
Launder-Ometer	Price on request	4
Stainless-steel Balls, ¼" dia, per 250, F O B factory	5.85	
Inconel Specimen Containers, etch	9.85	
Adapter Plates (for holding 5 Containers on Launder-Ometer shaft), each	10.00	
Water-Resistance—Test Apparatus		
Spray-Rating Unit: 1 aluminum spray nozzle, 1 specimen clamp, 1 spray-rating chart	1.00	1
Impact-Penetration Spray Nozzle	6.00	1
Hydrostatic Test Specimen Holder	55.00	1
Rain Tester	Price on request	7
Standard Blotting Paper		8
¼ ream (125 sheets), 60 lb, per lb	.32	
Less than ¼ ream, per lb	.39	
Minimum order, 25 lb (ca 50 sheets)		
Cutting charge per ream, cut to any desired size	1.00	
Minimum cutting charge	1.00	

SOURCES

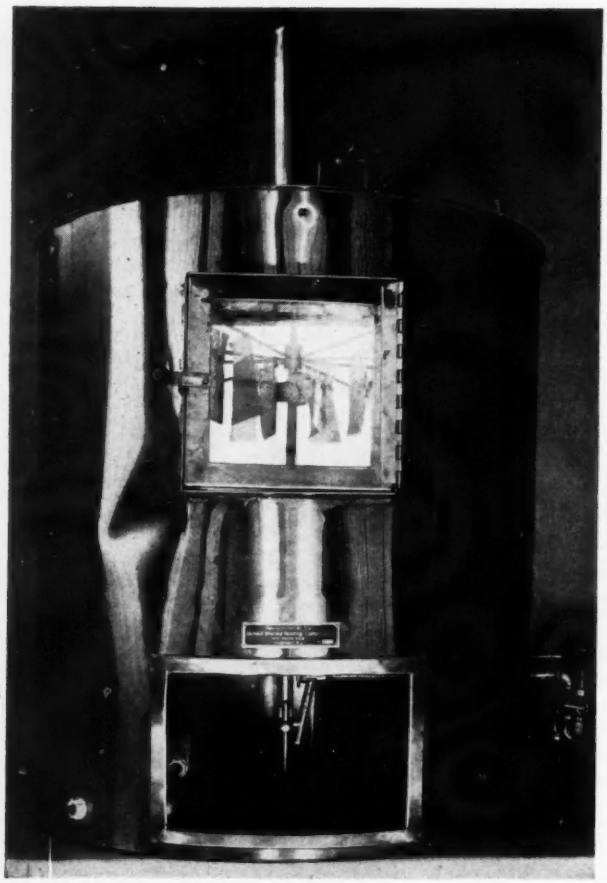
1) Dr H C Chapin, Secretary AATCC National Headquarters, Lowell Textile Institute, Lowell, Massachusetts
2) Werner Klaas, Testfabrics, 224 West 35th Street, New York 1, N Y
3) Riggs and Lombard, Suffolk Street, Lowell, Massachusetts
4) Atlas Electric Devices Company, 361 West Superior Street, Chicago 10, Illinois
5) United States Testing Company, 1415 Park Ave, Hoboken, N J
6) Orange Machine & Manufacturing Company, 354-6 South Jefferson Street, Orange, N J
7) Mico Instrument Company, 80 Trowbridge Street, Cambridge 38, Massachusetts
8) Standard Paper Manufacturing Company, Richmond, Va, Atten: J S Walden, Sales Dept

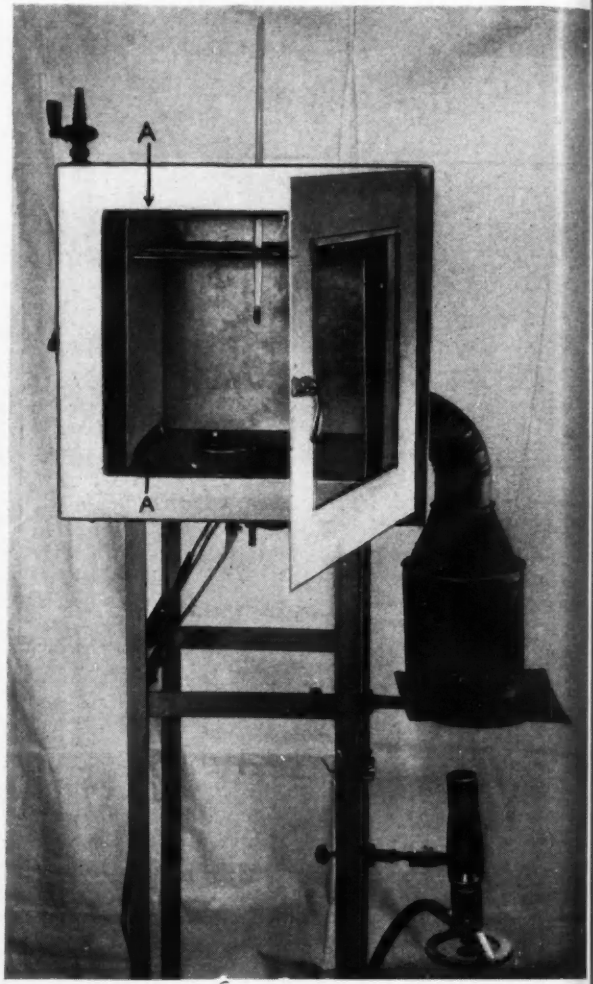
ATMOSPHERIC FADING TEST APPARATUS

Test Cabinets for evaluating fastness of dyed acetate to atmospheric oxides of nitrogen are fully described in the *American Dyestuff Reporter* of July 22, 1940 (pp 368-9). Blueprints of a suitable apparatus are available.

These cabinets permit exposures of test specimens and controls to an atmosphere containing oxides of nitrogen.

Test units containing 20 yards of 2¼-inch blue-dyed cellulose-acetate ribbon and a swatch of the "Standard of Fading" are sold as Control No. 1.





Test Cabinet for Atmospheric Fading of Dyed Acetate (Early Model)

Test Cabinet for Atmospheric Fading of Dyed Acetate (Later Design)

COLOR-TRANSFERENCE EVALUATION CHART

The Color-Transference Chart is designed to give positive means of expressing the degree of staining in a crock test. It is hoped that this Chart may be found adaptable to measuring small color differences in other color mark-off, staining and wash-down tests.

The Chart is essentially a set of Standard Munsell Color Chips arranged in a folder in such a way that specimens of the color or stain under test may be viewed in close proximity to the chips and may be classified accordingly.

See *Am Dyestuff Reptr* 34, 166 (1945); 34, 426 (1945); 34, 500 (1945); 35, 146 (1946).

COTTON SKEINS

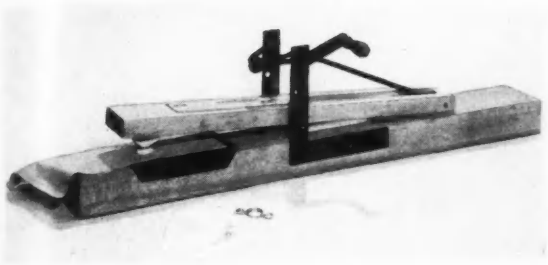
Five-gram skeins of 40/2 combed cotton yarn are available for use in the Draves Wetting Test. These are 36-inch skeins with the weight corrected to 5±0.05 grams under standard conditions of temperature and humidity.

Such skeins can be used in dye testing, although it must be kept in mind that the yarn has *not* been boiled out.

See *Am Dyestuff Reptr* 28, 421-428 (1939).

CROCKMETER

The Crockmeter is a device that allows a square of standard white cotton crock cloth to be rubbed against a dyed or printed specimen under controlled conditions of speed and pressure in



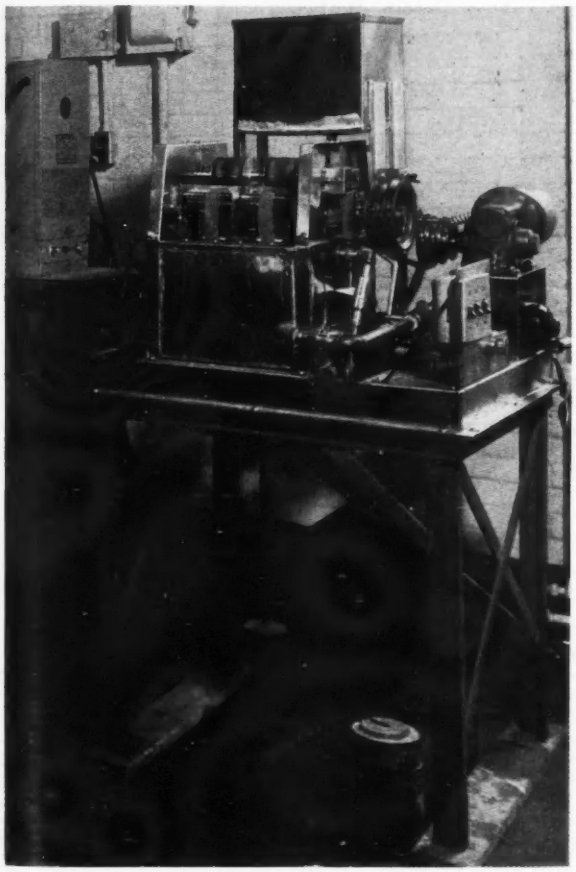
Crockmeter

order to permit estimation of the degree of color transferred from the dyed material to the white cloth. The test may be carried out either wet or dry as desired.

See *Am Dyestuff Reptr* 26, 446 (1937).

CROCKMETER CLOTH

Crockmeter cloth is an undyed, bleached, cotton fabric of the lawn type woven from combed yarns. A 96 x 100, 4.10-yards-per-pound fabric, calendered but not containing any finishing materials, has been found to be quite satisfactory. Two-inch squares of the cloth are packaged in bundles of 100 and sold in lots of 1000 for the convenience of testing and other laboratories using large amounts of this cloth.



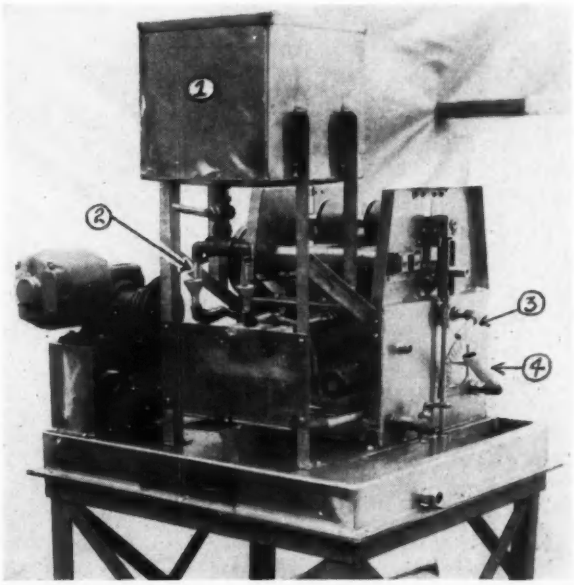
DETERGENCY COMPARATOR

An improved model of the Detergency Comparator is now available. It is designed to permit rapid and accurate laboratory evaluation of detergents under simulated plant conditions.

The machine has been thoroughly checked by the Committee on Evaluation of Detergents for Wool and has been found extremely useful for predicting the behavior of detergents under the conditions of high concentration and low liquor ratio existing in full-scale mill production.

A Comparator is now under test for use on cottons, and early results seem to indicate that it will be equally valuable in the cotton field.

See *Am Dyestuff Reptr* 36, 91-6 (1947).
See *Tech Man & Yr Bk, AATCC*, pp 148-9 (1950).



Detergency Comparator, Rear View

1. Rinse-Water Reservoir
2. Rinse-Water Equalizing Orifices
3. Suds-Box Drain (Adjustable to Waste or to Wash Box)
4. Water-Box Drain (Adjustable)

Detergency Comparator

The Detergency Comparator is essentially a pair of dolly washers scaled down to laboratory size. It is constructed of stainless steel, has thermostatically-controlled electrically-heated outer water bath in which water may be circulated by means of an electric pump to further insure close temperature control; stepped pulleys for speed selection; Hy-car-covered nip rolls (3" dia.); driven take-off rolls; baffles to prevent suds from cross-contaminating the detergent solutions under test; suds boxes with piping arrangements that permit the expressed liquor to be cascaded back, or to be drained through pipes to the wash boxes, or to be drained off directly into the waste line; adjustable pot eyes to help prevent the formation of hard creases in the running samples; a reservoir fitted with calipered openings; and a valve for close control of the rinsing process.

FABRIC FOR EVALUATION OF INSECT-PEST DETERRENTS

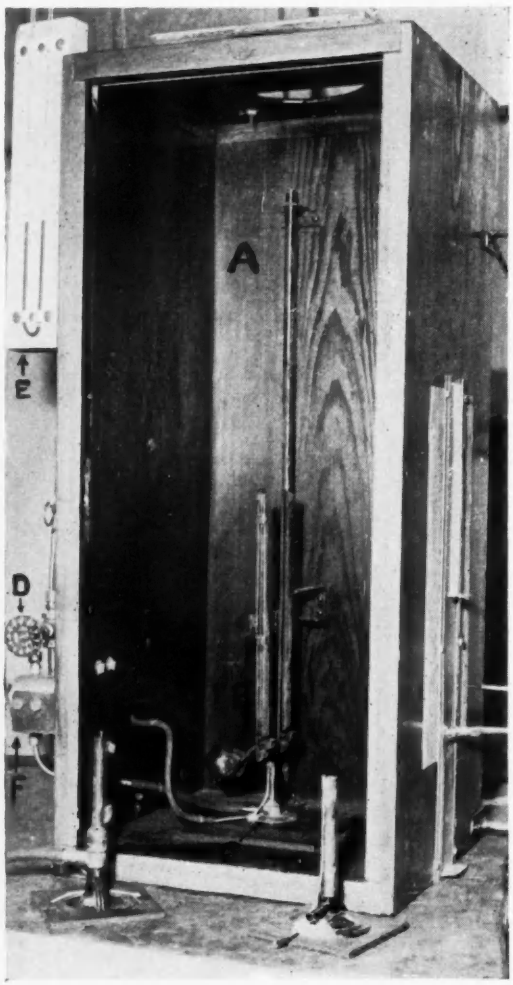
This standard woolen fabric, commonly known as "Moth Cloth," contains less than one-half per cent of matter extractable with ether and alcohol. It is used as the base material for checking the effectiveness of moth-resistant compounds. Treated and untreated specimens of the fabric are tested simultaneously by exposure to the destructive action of clothes moths or carpet beetles.

FIRE-RESISTANCE TEST APPARATUS

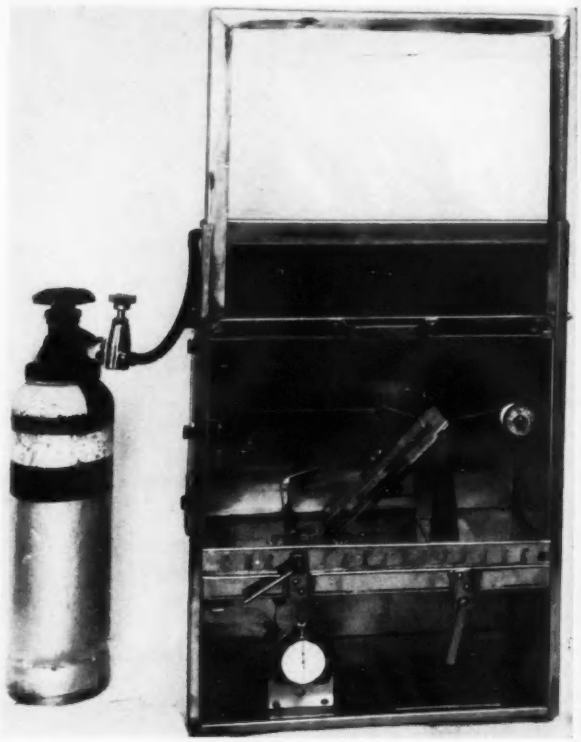
A test chamber suitable for evaluating fire resistance of industrial fabrics has been developed by the Committee on Testing Fire-Resistant Textile Materials.

Scale drawings showing the structural details of such a chamber are available from the Secretary.

For additional information see *Tech Man and Yr Bk* of AATCC, pp 88-9, 130-1 (1947-8); pp 73, 118-9 (1950).



Fire-Resistance Test Apparatus



Flammability Test Apparatus

FLAMMABILITY TEST APPARATUS

The Flammability Test Apparatus is designed to permit rapid evaluation of the more highly flammable (flash-fire) textile materials. Through its use it is possible to measure accurately the time required for a flame to travel up a five-inch length of specimen mounted on a 45° inclined plane.

See *Am Dyestuff Reptr*, 39, 194-7 (1950).

KNITTED WORSTED TUBING

This is an undyed, unscoured, knitted tubing one inch in width prepared from 2 strands of 2/16" worsted yarn intended primarily for use in the Fulling Test, but it is also used extensively in washing and dyeing tests.

LIGHT COLORFASTNESS

FADE-OMETER—The Fade-Ometer is a machine for exposing a large number of dyed or printed textile specimens to the light rays of a carbon arc lamp with controlled temperature and humidity.

STANDARDS—A set of seven dyeings consisting of a series of dyed woolen standards for comparing and classifying the degree of fading of dyed or printed textiles. These seven standard dyeings, L2-L8, cover the range of exposures from 2½ to 320 hours in the Fade-Ometer.

The standards were prepared by mixing in various proportions stock dyed with Eriochrome Azurole B with stock dyed with Indigosol Blue AGG. The principle involved is that wool

fibers dyed with a fugitive dye and fibers dyed with an extremely fast dye can be mixed in different proportions so as to give almost any degree of light fastness with only two dyeings and two dyes being used. The proportions were chosen to produce definite degrees of fading when exposed in a Fade-Ometer or in natural sunlight. The most-fugitive blend shows appreciable fading between 2½ to 5 hours and the least-fugitive blend shows appreciable fading after 160 to 320 Fade-Ometer hours.

Composition of Standards

	Fast Dyeing	*Fugitive Dyeing*
	%	%
L2	0	100
L3	39.3	60.7
L4	63.16	36.84
L5	77.64	22.36
L6	86.43	13.57
L7	91.76	8.24
L8	95	5

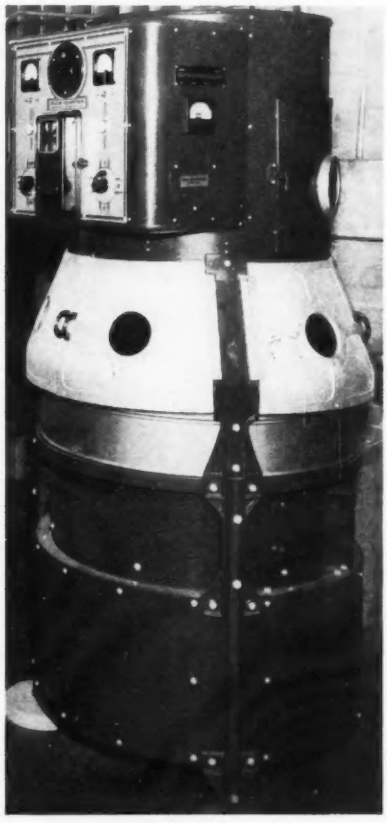
Fugitive Dyeing—

Dyeing

0.4% Erio Chrome Azurole B (C I 720)
10 % sodium sulfate
4 % acetic acid, 80%

Top-chroming

0.5% sodium dichromate



Atlas Fade-Ometer

Fast Dyeing—

Dyeing

3 % Indigosol Blue AGG
5 % ammonium sulfate
3 % acetic acid, 80%

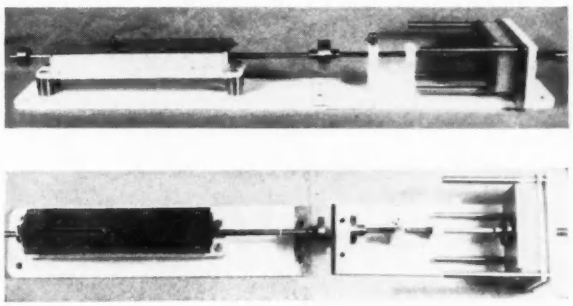
Oxidation

1.5% ammonium thiocyanate
2 % sodium dichromate
10 % sulfuric acid, 66° Bé

See *Am Dyestuff Reptr*, 33, 33 (1944) and 36, 194 (1947).

PERSPIROMETER

The Perspirometer is designed to produce a standard pressure on colored textile specimens under test for fastness to perspiration. Specimens saturated with acid or alkaline synthetic perspiration are placed between glass plates held in a vertical position by two metal end-plates, one fixed and the other adjustable. Pressure is raised to 10 pounds by an adjusting screw. The specimen rack is then locked to maintain this pressure, removed, and placed in an oven at 100±2°F for a minimum of six hours.



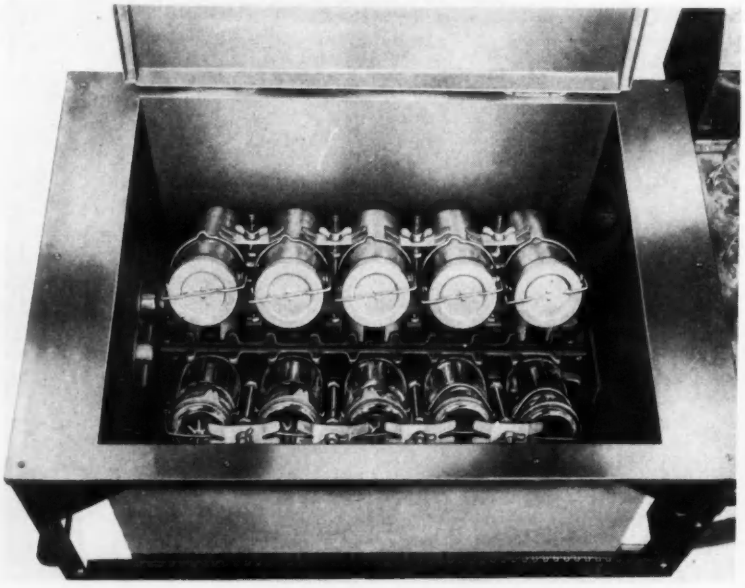
Two Views of the Perspirometer

WASHING COLORFASTNESS

STANDARDS—To aid in classifying the washfastness characteristics of dyed cotton, wool or silk, a set of 4 standard dyeings has been prepared for each of these three kinds of fibers. Standard dyeings are about 16 inches long by 5 inches wide. The degree of color loss of these standards in laundering is compared with that of the samples under test.

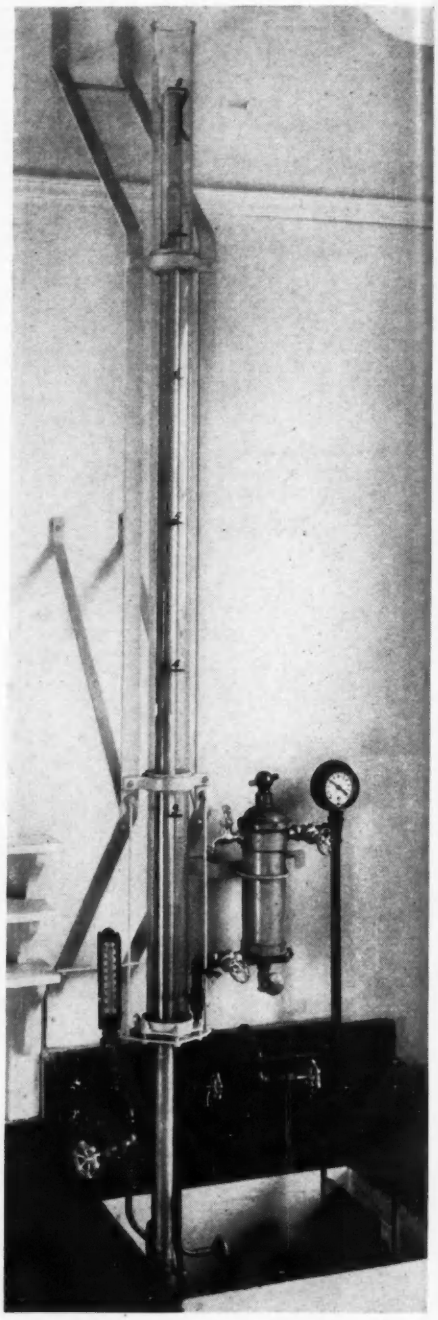
I. Cotton, set of four dyeings
   Standard for
   Class 5 10% Indanthrene Violet BN Ex Paste (C I 1163)
   Class 4 1% Diazo Fast Violet BL
   Class 3 0.5% Methylene Blue (Zinc Free) (C I 922)
   Class 2 1% Chrysophenine (C I 365)
   Class 1 No standard necessary
II. Wool, set of four dyeings
   Standard for
   Class 5 2% Eriochrome Azurole BX (C I 720)
   Class 4 1% Brilliant Blue B
   Class 3 1% Alphazurine A (C I 714)
   Class 2 1% Alizarine Blue SKY (C I 1088)
   Class 1 No standard necessary
III. Silk, set of four dyeings
   Standard for
   Class 5 5% Indigo Blue MLB/4B Powder (C I 1184)
   Class 4 2% Eriochrome Azurole B (C I 720)
   Class 3 2% Formyl Violet S4B (C I 698)
   Class 2 2% Patent Blue A
   Class 1 No standard necessary

Atlas Launder-Ometer



Inside View of Launder-Ometer

LAUNDER-OMETER—The Launder-Ometer is a machine designed for washing at one time as many as twenty samples in individual glass jars under closely controlled temperature. The jars are mounted radially on a rotor, which immerses them in the water bath while turning. Stainless-steel balls are added to each jar to increase mechanical action and thus to accelerate the test.



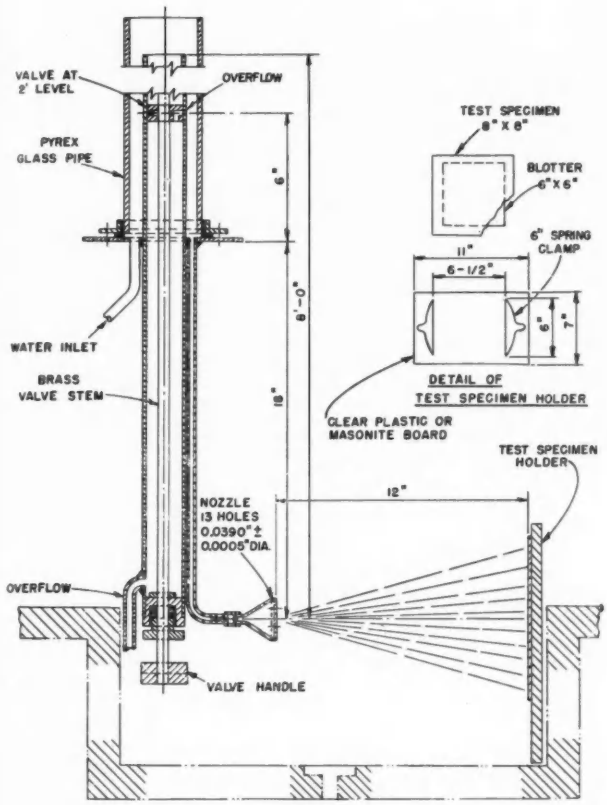
Rain Tester (Complete Assembly)

WATER-RESISTANCE TEST APPARATUS

RAIN TESTER—The Rain Tester directs a spray of water against a fabric specimen. The pressure of the spray is governed by the head of water in a large glass column, which is graduated in 1-foot intervals from 2 feet to 8 feet. Beneath the

fabric is a standard blotter. The increase in weight of the blotting paper in a given time is used to evaluate the resistance of the cloth to penetration by water.

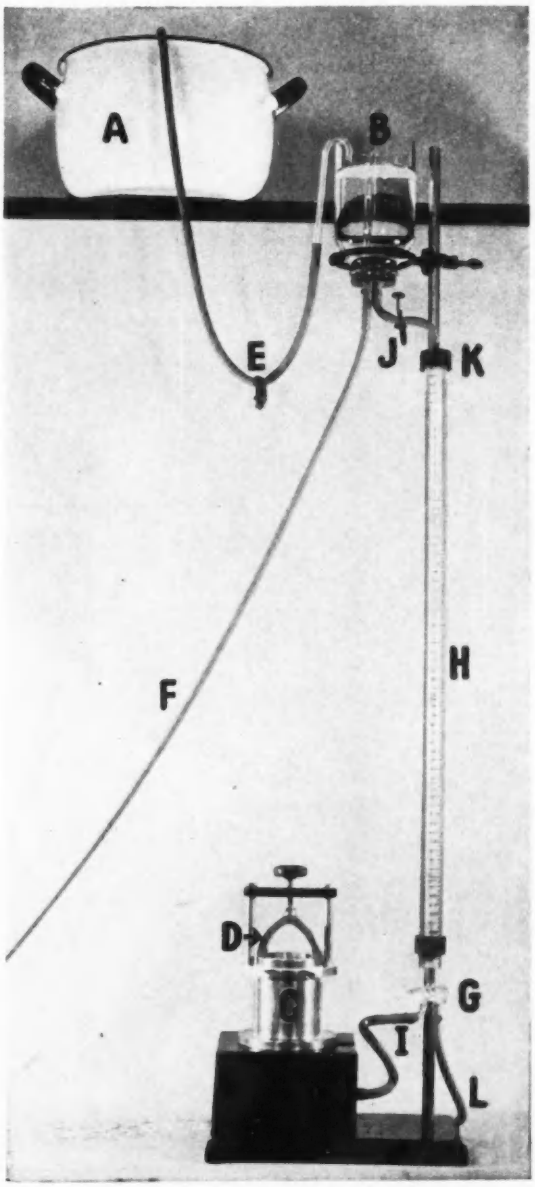
STANDARD BLOTTING PAPER—White AATCC Textile Blotting Paper has been carefully standardized for use with the Rain Tester. It is available in a stock size of 24" x 38" or cut to any desired size.



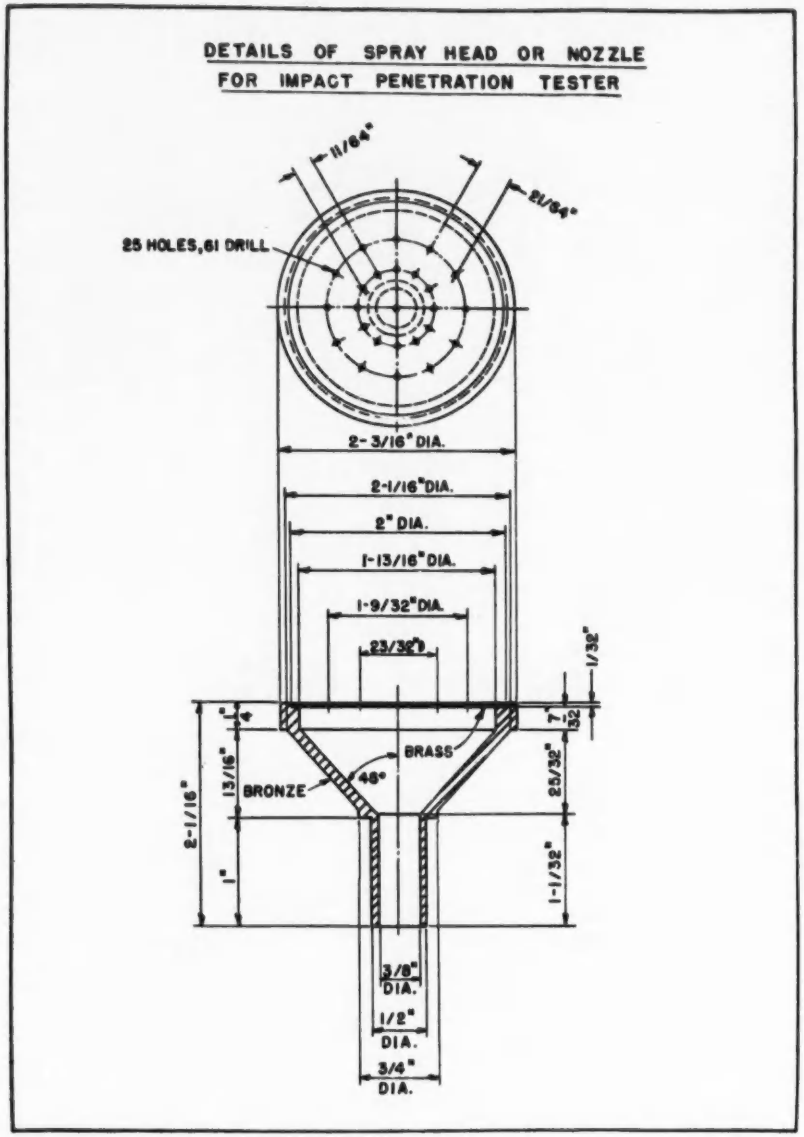
Rain Tester (Structural Details)

Hydrostatic-Test Unit

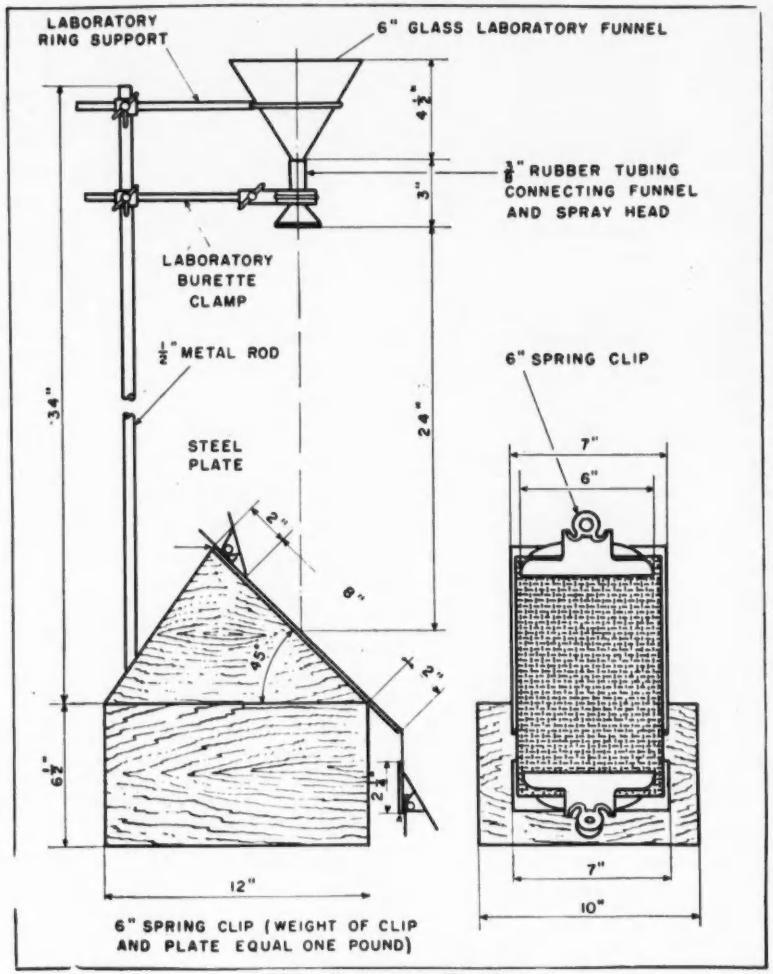
Hydrostatic-Test Specimen Holder



HYDROSTATIC-TESTER SPECIMEN HOLDER—In addition to the hydrostatic-test specimen holder, available from AATCC, this test requires a glass tube backed with a scale to measure the head of water at which leakage through a fabric occurs. Glass and rubber tubing with pinch cocks to control flow of water into the reservoir of the head are also required. The holder is essentially a small well, with a water-tight clamping device at its top to hold the test specimen in contact with a regularly increasing head of water. Water is admitted to the glass tube at a rate of 1 cm per second. The height in centimeters at which three drops of water penetrate to the surface of the fabric under test is taken as the end point.



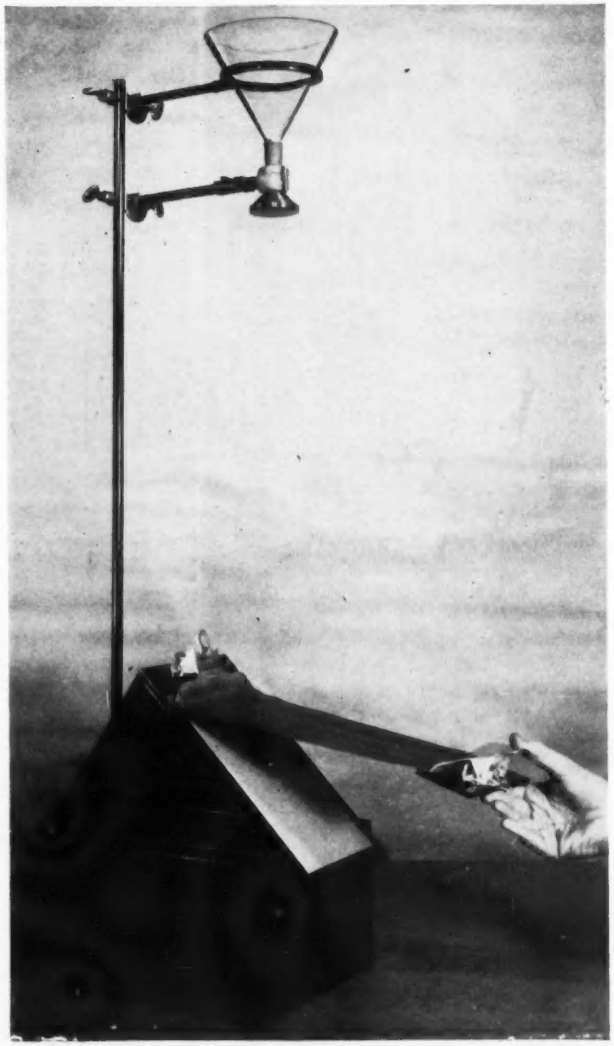
IMPACT-PENETRATION SPRAY NOZZLE—The impact-penetration nozzle is brass and contains twenty-five 0.039" holes. The test is quite similar to the spray test, but evaluation is made by measuring the gain in weight of a standard blotter placed beneath the specimen.



Impact-Penetration Test Unit (Detailed View)

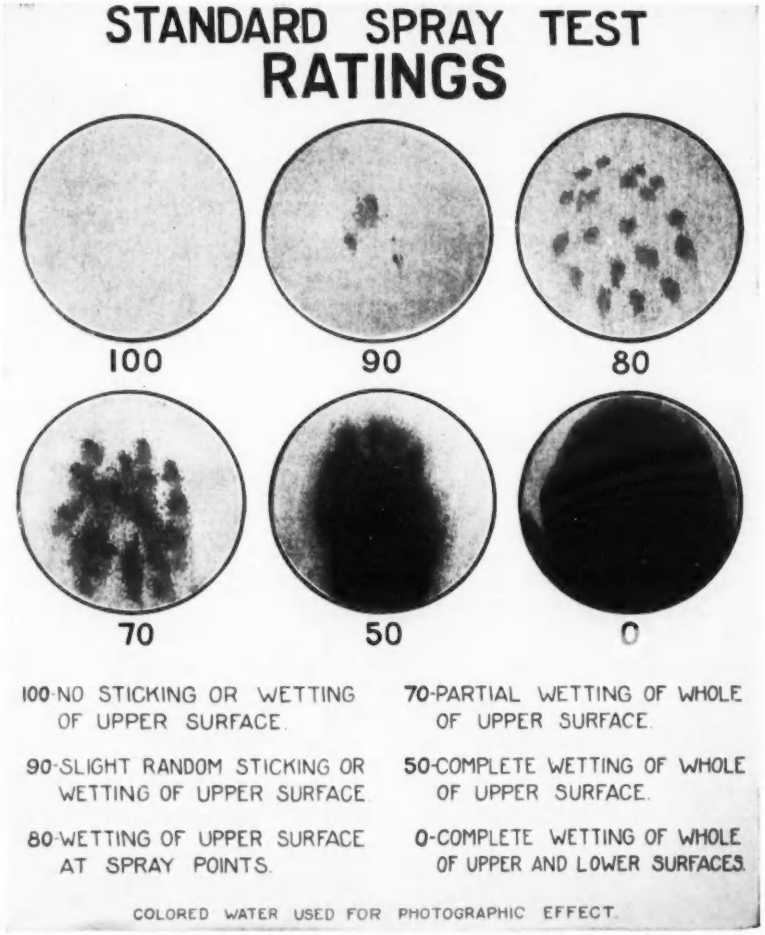
SPRAY-RATING UNIT—The spray-rating unit consists of

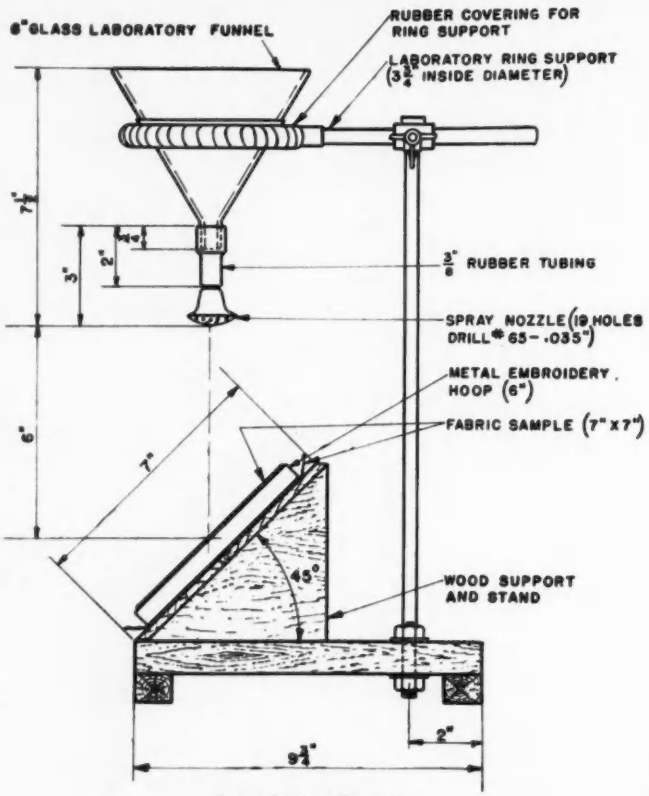
Impact-Penetration Test Unit
(Detailed View)



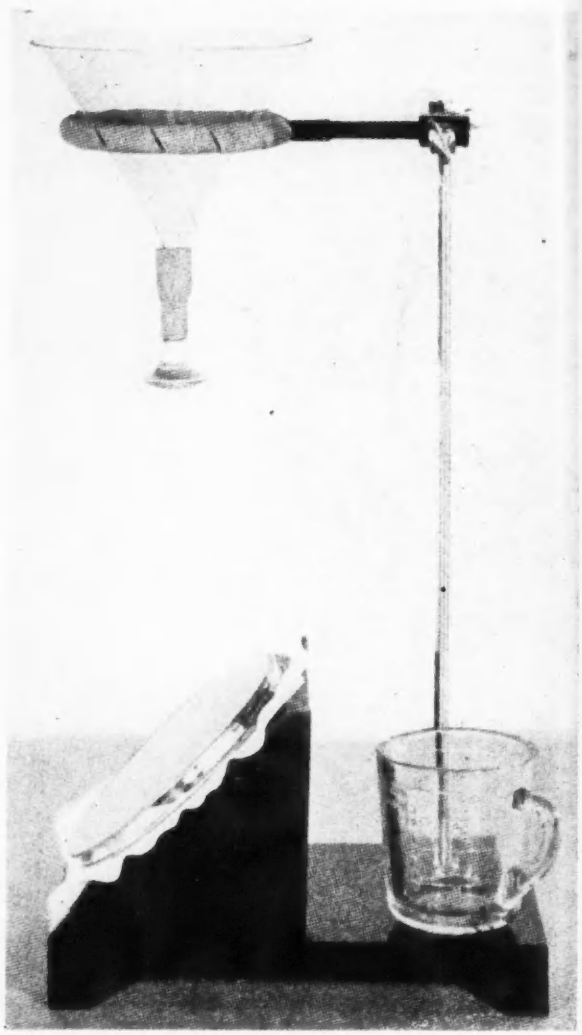
Impact-Penetration Test Unit

SPRAY-RATING UNIT—The spray-rating unit consists of the following parts: one aluminum spray nozzle with nineteen 0.035" holes, one cloth-specimen holder (metal embroidery hoop) and one rating chart for indicating the degree of wetting of the cloth surface after spraying.


STANDARD SPRAY TEST RATINGS
100
90
80
70
50
0
100-NO STICKING OR WETTING OF UPPER SURFACE.
90-SLIGHT RANDOM STICKING OR WETTING OF UPPER SURFACE.
80-WETTING OF UPPER SURFACE AT SPRAY POINTS.
70-PARTIAL WETTING OF WHOLE OF UPPER SURFACE.
50-COMPLETE WETTING OF WHOLE OF UPPER SURFACE.
0-COMPLETE WETTING OF WHOLE OF UPPER AND LOWER SURFACES.
COLORED WATER USED FOR PHOTOGRAPHIC EFFECT.



Spray-Rating Test Unit
(Detailed View)



Spray-Rating Test Unit

Mid-West Section Meeting Report

February 3, 1951
Morrison Hotel, Chicago, Ill

THE winter meeting of the Mid-West Section was held at the Morrison Hotel, Chicago, Illinois, on February 3, 1951.

The afternoon meeting was called to order at 3:00 pm by the Vice Chairman, after which he introduced W E Winans, Research Division of Armour and Company, who spoke on the problems faced by packaging industries in today's chaotic market. The afternoon meeting was attended by 70 members and guests.

Dinner was served to 97 members and guests, after which the evening meeting was called to order at 8:30 pm by the Chairman. The Secretary's and Treasurer's reports were read and accepted. The interim chairman of the Intersectional Contest Paper Committee then reported on the progress his committee had made. Because of the illness of its chairman, the Corporate Membership Committee report was made by the Secretary. The Chairman of the Outing Committee, George Chabot, gave his report and announced that his committee would be made up of the following members:

F J Acker
A F Blackburn
K P Ferguson
W H Jaeger
H T Latham
H F McKenna
J Morgan
W D Paine
C H Sillin
J G Stott

The problem of selecting future meeting sites was brought up and after a short discussion a motion was made by A Olson and carried that this subject be reconsidered at our next meeting. The Chairman then introduced the speaker of the evening, Colonel Victor C Searle, Commanding Officer of the Chicago Chemical Procurement District, U S Army. Colonel Searle gave a talk on the timely subject of *Military Procurement Today*, which was followed by discussion.

Respectfully submitted,
JOHN E A SCHRODER, *Secretary*

Wool Group——

THE WORSTED-MILL LABORATORY*

CARL E MEDDE and PALMER E MORALLY
Lorraine Manufacturing Co. and Wanskuck Co

INTRODUCTION

THE widening of the scope of the worsted-mill laboratory's testing facilities has caused many chemists and textile technicians to reconsider its functions. It is our idea to point out the minimum requirements which in our opinion are needed to make the worsted-mill laboratory not only a process-control center but a versatile instrument in the highly profitable field of manufacturing research. The development of modern textile testing equipment, particularly in the physical testing field, has helped immeasurably in creating a universal interest in finding the why and wherefore of this most competitive industry.

LABORATORY LOCATION AND EQUIPMENT

With the ideas of process control and mill research in view, the location of such testing facilities must be such as to permit easy access of samples to the laboratory and prompt release of information and test results. As a suggestion, the laboratory might be located on the ground floor as near or central to all mill operations as possible. This location would permit the supervisory personnel to visit and make the most of these services. Freedom from dust, vibration, fumes, etc must be a consideration. The idea of being centrally located to all operations will insure greater speed and more interest in the delivery of samples, especially those normally delivered by mill-trained personnel.

While the laboratory should be near the general operations of the mill, it should also be near enough to top management to develop its consultative uses.

Carl E Medde

The worsted-mill laboratory no longer is only an analytical chemical laboratory. True, chemical tests as were carried out in the past continue to be made there, but many more are made in accurate mechanical and electrometric apparatus yielding quicker and better results. Dye-fastness problems have become increasingly important especially with blends, and application methods of laboratory origin give greater insurance of a well-matched shade.

Microscopy occupies a more prominent place for the recognition of both natural and synthetic fibers and for the well-known fiber-diameter measurements.

Physical testing of top, yarn, and fabric has become one of the important functions of the laboratory. The standard conditions under which such tests are carried out make this type of test easily duplicated and permit the use of statistics in quality control of manufacture.

Manufacturing process research has greatly benefited from the development of new and improved machinery; but in the final selection of competitive machines, both from a performance and economical standpoint, the analytical data obtained from the improved facilities of a modern laboratory is invaluable in reaching a favorable decision.

This is an extremely vital point in its location, since many decisions, not only in routine quality-control practice but in process research, should be shared with management. Testing of the many new products both in laboratory and mill and the devising of new uses for old products, as well as variations in tests of raw wool, top, yarns, etc, yield an impressive amount of data. But, however valuable this may be in an abstract way, unless management is in close contact with this wealth of information, the best and most profitable values of the laboratory will not be well used. Data obtained in the laboratory should supplement and prove the practical steps taken in the mill, many of which are often altered without real control.

The worsted-mill chemical section should be partitioned off from the rest of the laboratory for obvious reasons. It is equipped with benches of suitable height, fume closets and hoods with ventilation, and other furniture. Table tops of white wood stained with aniline black, after oiling, give excellent resistance to chemicals. General ventilation of the room should be such as to eliminate drafts and freedom from dust. Routine use of extraction apparatus requires a separate portion of the laboratory, preferably under a hood, and electric-hot-plate heating.

pH apparatus should be located in an easily accessible spot. In fact, all chemical or other testing apparatus must be placed so as to afford the most accurate results in the shortest possible time.

Dyes, their testing, strength evaluation, shade matching, etc, call for another section of the laboratory. Here we could expect to find a collection of standard dye samples housed in a metal or tight-fitting wood cabinet for protection against light and fumes. A simple filing of these dyes in order from yellow, orange, brown, red, violet, blue, green to black or gray will serve most needs. Stoves of various types may be suggested, gas, electric and the more elaborate salt or glycerine baths, the latter excellent but best suited where large

* Presented by Carl E Medde at the 29th Annual Meeting in Portsmouth, N H on Sept 29, 1950.

numbers of dyeings are to be made at one time. One simple stove is the six-unit individually controlled electric hot plate. These are easy to clean and repair and may be moved to any place in the laboratory. Stoves should be placed at a height most suitable to prevent physical strain from continued stirring or turning. Stock solutions of dyes commonly used and solutions of the various dye assistants should be arranged for best use. In this section may be found the Fade-Ometer and also lamps for color matching similar to those used in the dyehouse. It might be well to have the Fade-Ometer partitioned off and the heat it generates to be conducted to ventilators.

Ample table space for recording, mounting samples and filing tests must be provided.

Between the chemical and dyeing section, there could be space for a balance room, which should be free from vibration as well as dust and fume.

A microscopical section must be separated from the other portions of the laboratory, not only to prevent dust and draft but to serve as a practical dark room if fiber-diameter measurements are carried out. Microscopic slides, mounting materials, devices for sectioning fibers and their identification should be provided. In this room, an ultra-violet light should be so placed that spots, stains, etc, identifiable by such light may be recognized.

Fiber-diameter measurements, together with fiber-diagram determinations, are necessary tests for the worsted mill. These latter may be made by the technician who makes diameter measurements. As a suggestion, diagram tests should be made in another room of the laboratory or in a small booth free of drafts. This room should contain ample table space for full-width examination of samples of fabric or top for nep count. Here may be placed top-, roving-, and yarn-evenness-testing equipment; here also may be apparatus for making shrinkage and washing tests, ends and picks, slippage, sectioning fabric for weight determination, Seriplane winding of yarn, etc. This room should be supplied with large-size conditioning ovens for moisture-regain determinations.

A fair-sized conditioned room is a necessity for physical testing. This should be large enough to contain the necessary fabric and yarn break-test machines, yarn reels, balances for yarn count, and for fabric weights, etc. Arrangement should be made to condition roving and yarns quickly by whirling them rapidly so that results may be obtained within a short time. Shelves around a portion of the wall should be of screen to permit free circulation of air. Here should be placed air-flow fiber-measuring apparatus and fiber diagrams weighed here after conditioning.

SAMPLING

Sampling is as important as a test. While it is quite simple to sample powdered or crystal dyes and chemicals or oils, the sampling of yarn, top, fabric, or roving for moisture determination presents the laboratory with many problems. If wool or wool products are sampled, immediately enclosed in large rubber or vinylite bags shaped like a folded tobacco pouch and then enclosed with several rubber bands, they may be transferred to the laboratory without appreciable loss of moisture.

In the sampling of wool top for fiber diameter, a single sample from one top is not representative; rather a blend of at least six top selected at random should be the minimum for a test. Aside from the specified number of fibers for analysis, which officially varies according to grades, we find 400 to be a good routine control figure for any grade from 80's down to 50's. In rare instances where the test is not too conclusive, additional fibers may be measured to establish definitely a specific grade limit.

Another suggestion is to record the time of receipt and the test to be made for all samples as they enter the laboratory and place identifying marks on them. This procedure method, while more elaborate than may seem necessary, actually may be a money saver in giving the cost department some idea as to the price per test.

While specific forms or tickets are not always necessary for attachment to samples being delivered to the laboratory for testing, it is very important to accompany the specimen with every bit of information possible. This would indicate the nature of the sliver, such as roving, slubbing, comb sliver, etc. Next, it would indicate what test is to be done, and whether it is a routine or a special analysis. Overseers should be versed in the official names of the laboratory tests so that a staple test, for example, might not be taken for a Wedge analysis. Another little sideline relative to the above is that in the case of twist-direction of yarn, all lab reports go out as S or Z twist, not regular or reverse, which in the past has been all too easily misinterpreted.

QUALITY CONTROL

Quality control has been practiced in every mill since mass production first appeared, but quality control by statistical methods is relatively new to the worsted textile mill. Such methods as can be adopted by the mill involve only the simplest parameters of statistics, but nevertheless they permit limits to be established easily. By use of control-chart methods already applied in the machine, electrical and other industries, the mill may keep a check on the evenness of top, uniformity of roving, count of yarn produced, and other running variables. Since such things as operator carelessness, departure from a standard, and machine settings generally cast their shadows before them, the tests of top, roving, yarns, etc, in the conditioned room should not be tabulated on a sheet of paper but rather on prepared control charts. Here any trend toward other than standard quality should be used to warn the supervisor in advance of off-count yarn and other deviations from normal. When the overseers have had a little experience with statistical quality control as a checking device, they are quick to see its value. Operators soon acquire a working knowledge of what is being attempted, and even against their will become a part of the quality-control police force.

As a precaution, the simpler the statistical control system, the better will be the control of quality. Undue emphasis upon statistics and elaborate chart systems, naturally, may defeat the real purpose of control.

As mentioned before, each overseer should be indoctrinated with the spirit of the control system and taught how he may make best use of the data accumulated. By such means, the actual inspection force will be more than doubled, possibly tripled in numbers.

Control charts should be prominently displayed in the mill as well as in the laboratory. By a graphical representation of what his equipment or machinery is doing for him throughout his working day, the operator in the mill can create an interest, which will tend to remove the boredom that in some cases can contribute to inferior quality production. These charts can only be made from the accumulation of data derived through laboratory testing.

RESEARCH

Under the heading of research may be considered the most valuable activity of the laboratory: namely, plant-process research, wherein laboratory processing, whether drawing, spinning, weaving, dyeing or finishing, may be improved. With adequate equipment, the laboratory performs the important function of assaying promptly the direction taken by a process

change. By the use of statistical analysis, it is possible to predict the amount of testing necessary to arrive at a conclusion before a process change is complete.

As to methods of test procedure, the Association's Yearbook and Analytical Methods contain standard methods of examination for dyes, dyeings, chemicals, detergents, oils, etc. The ASTM Manual of Standards on Textile Materials offers many physical methods and suggests standards that are in common use in the industry. Methods used by commercial testing laboratories, mail-order companies, department-store chains and others may need to be incorporated in mill laboratory testing. Test methods in any field, if found of use for worsted textiles, should be examined for their worth. As a suggestion, a laboratory book of tests should be compiled to include all routine tests, as well as those occasionally used. Every attempt should be made to keep this book up to date by prompt incorporation of changes in procedure and standards. After any change, all the personnel should note the change and indicate that they are aware of the alteration.

Research on methods most suited to the particular mill is a constant need of all laboratories. Frequently shortcuts with moderate accuracy are more useful in such studies than precision results.

PERSONNEL

The personnel normally includes a director who can oversee all activities carried out in the various fields of testing. He should be experienced as a technician and be familiar with the mill processes. An assistant whose time is devoted to the close supervision of the work should be assigned the task of preventing delays in testing. The promptness with which samples are given the required tests and the results reported to those concerned is a major part of the testing procedure. Overseers should become familiar with laboratory promptness and should always be informed of delays in testing when they occur.

Women with a fairly high degree of manual dexterity are most valuable as laboratory assistants. They should be capable of using a slide rule and a comptometer. It is also desirable that they have some typing ability for use in filling out records and laboratory test sheets.

All laboratory assistants should be trained to value accuracy as the first consideration. Although assistants should become specialists in some particular field of testing, there are times when it will be found advisable to have the personnel skilled in all tests.

CALENDAR

COUNCIL

April 20 (Raleigh, N. C.), June 15 (Hotel New Yorker, New York), October 18 (Hotel Statler, New York), November 16 (Hotel New Yorker, New York).

GENERAL RESEARCH COMMITTEE

April 20 (Raleigh, N. C.), June 15 (Hotel New Yorker, New York), October 18 (Hotel Statler, New York), November 16 (Hotel New Yorker, New York).

NATIONAL CONVENTIONS

1951: October 17-18-19, Statler, New York.
1952: Nov. 6-8, Boston.
1953: September 17-19, Hotel Stevens, Chicago.

HUDSON-MOHAWK SECTION

Meetings: May 11 (Albany), June 22 (Annual Outing).

MIDWEST SECTION

Meetings: May 5 (Hotel Schroeder, Milwaukee), June 16 (Outing, Lake Lawn Lodge, Delavan, Wis.), September 29 (Morrison Hotel, Chicago).

NEW YORK SECTION

Meetings: March 30 (Swiss Chalet), May 4 (Swiss Chalet), June 15 (Outing).

NORTHERN NEW ENGLAND SECTION

Meetings: April 13 (L T I, Lowell), May 18 (Andover C C, Andover), October 26 (L T I, Lowell), November 30 (Boston, Annual Meeting).

Outing: June 8 (Merrimac V C C, Methuen).

PHILADELPHIA SECTION

Meetings: April 13, September 14, October 26, December 7, January 18, 1952 (all at Kugler's Restaurant, Philadelphia).

Outing: June 1 (Torresdale-Frankford Country Club).

RHODE ISLAND SECTION

Meetings: March 30 (Providence Engineering Society), April 27 (Wannamoisett Country Club), May 25 (Johnson's Grill), October 26 (Providence Engineering Society), November 16 (Johnson's Grill).

Outing: June 22 (Wannamoisett Country Club)

SOUTH CENTRAL SECTION

Meetings: May 12, December 1 (both in Hotel Patten). Summer Outing: August 24-25.

SOUTHEASTERN SECTION

Meetings: May 5 (Atlanta, Ga.), June 8-9 (Annual Outing, Radium Springs, Albany, Ga.), September 8 (Columbus, Ga.), December 8 (La Grange, Ga.).

WESTERN NEW ENGLAND SECTION

Meetings: May 4, June 22 (Outing).

OTHER EVENTS

AMERICAN ASSOCIATION OF TEXTILE TECHNOLOGISTS

Meetings: April 4, May 2, June 6, September 12, October 3, November 7, December 5 (Builders Club, New York).

AMERICAN CHEMICAL SOCIETY

Meetings: April 1-5 (Boston, Mass); April 8-12 (Cleveland, Ohio); September 3-7 (New York, N Y).

AMERICAN SOCIETY FOR TESTING MATERIALS

Committee D-12 on Soaps and Other Detergents, March 19-20, New York.

Annual Meeting, June 18-22, Atlantic City, N. J.

Spring Meeting and Committee Week, March 3-7, 1952, Cleveland, Ohio.

Annual Meeting, June 23-27, 1952, New York, N. Y. (The biennial Apparatus and Photographic Exhibits will be held in conjunction with this meeting).

NATIONAL ASSOCIATION OF TEXTILE MACHINERY MANUFACTURERS

Exhibit of American Textile Machinery, April 26-May 1, 1954, Atlantic City Exhibition Hall, Atlantic City, N. J.

NATIONAL OUTERWEAR AND HOSIERY ASSOCIATION

Knitting Arts Exposition, April 30-May 4, Atlantic City Auditorium.

TEXTILE RESEARCH INSTITUTE

Annual Meeting, Nov. 8-9.

EMPLOYMENT REGISTER

This column is open for two insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the Secretary.

51-3

Education: B S, Chemistry.

Experience: Chemist and dyer, rayons.

Age 28; married; references; north Atlantic coast preferred.

3-5, 3-19

51-4

Education: B A, with year of graduate study.

Experience: Chemist, technical sales and service in textile industry, resins.

Age 31; single; location not restricted.

3-5, 3-19

51-5

Education: B S, Textile Chemistry & Dyeing.

Experience: Textile laboratory and finishing plant.

Age 25; single; references; eastern U S preferred.

3-5, 3-19

Rhode Island Section Prize

THE Sectional Committee of the Rhode Island Section has voted to give $1,000 to each of four schools within its jurisdiction, the income of which is to be used to provide a cash prize to be awarded each year to the student presenting the best paper on any subject relating to textile chemistry. The first award is to be made in 1952 and they will continue until 1967. Details were released in a statement, the text of which follows:

"There are in the territory covered by the Rhode Island Section four schools which have textile chemistry courses. These are:

Bradford Durfee Technical Institute
New Bedford Textile Institute
Rhode Island State College
Rhode Island School of Design

"Each of these schools have special funds administered by the financial authorities of the institutions, the income from which is used for special purposes as designated by the donor.

"The Rhode Island Section sponsored the Annual Convention of the Association at Wentworth-by-the-Sea, Portsmouth, New Hampshire, September 28, 29, and 30, 1950. When the affairs of the Convention Committee were completed it was found that a surplus of funds existed. On recommendation of the Convention Committee it was the vote of the Sectional Committee that $1,000 be given to each of the four schools listed above to be invested by them in accordance with similar funds which they now handle. The income from these funds varies from 3 to 5% for the different schools. This will give an income of from $30 to $50 a year.

"This money was presented to the schools and accepted by them under the provisions given. The income from the principle is to be used to provide a cash prize to be awarded each year to the student presenting the best paper on any subject relating to textile chemistry. The papers are to be presented as in specific competition for this prize. It is the feeling of the Convention Committee, the Sectional Committee and of the authorities of the four schools mentioned that this cash prize will be very acceptable to the student who wins same and also will increase interest in textile chemistry problems.

"The prize is to be awarded toward the end of each scholastic year and is to be known as the AATCC — RHODE ISLAND SECTION PRIZE.

"The first award from this fund is to be made in 1952 and the awards will continue each year until 1967. At that time, the principle of the fund can be used in any manner which the authorities of the school may consider advisable. There are no restrictions on the ultimate use of this principle amount. It could be used to continue to provide income for future prizes or for purchasing any such equipment which might seem particularly desirable.

"As the textile industry in years to come must progress and develop through the trained men who enter into it, it is felt that this prize may well be of interest to the students and, in competing for same, they will obtain valuable experience in writing technical papers."

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Southeastern Section Changes Outing Date

THE annual outing of the Southeastern Section has been moved up one week and will be held June 8-9 at Radium Springs, Albany, Georgia.

Western New England Section Meeting Report

Rapp's Restaurant, Shelton, Connecticut
January 26, 1951

APPROXIMATELY 55 members and guests were present to hear the speaker of the evening, Henry F Herrmann, General Dyestuff Corporation, past president of the National Association, speak on "Dyestuff Outlook: Realism vs Theory." Mr. Herrmann was optimistic in his outlook as regards supplies of dyestuffs during the present national emergency but strongly emphasized that a high degree of coordination will be necessary to maintain a steady flow of materials and goods to the manufacturers and ultimate consumers.

J Robert Bonnar, recently elected Vice President of the national association, was also present and spoke briefly.

R J Carey, new chairman of the Section, presided.

Respectfully submitted,
A S NYQUIST, *Secretary*

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P J KENNEDY, Chairman of the Student Inter-Sectional Contest Committee, states that student papers will be presented at the forthcoming 1951 convention in New York City. Present indications are that beginning with the 1952 convention a full fledged contest will be held. Judges for the contest are now being selected. The committee in charge consists of P J Kennedy, *Chairman;* J R Bonnar, L W Craft, Wm M McCann and Prof P Theel.

—♦ ♦—

THE Publications Committee has organized to adminster the American Dyestuff Reporter Award. This is an annual award of $200 to the author or authors of the paper published in the *Proceedings* which is considered best in the opinion of the Publications Committee. A screening committee has now been appointed, which includes Harold M Chase, Consultant, Dan River Mills; Hugh Christison, Arlington Mills Division, Wm Whitman Company, Inc; and Professor Ethel L Phelps, School of Home Economics, University of Minnesota.

This committee will recommend papers among which the Publications Committee will make the final choice.

Pacific Southwest Section Meeting Report

Los Angeles Athletic Club
February 16, 1951

THIRTY-NINE members were in attendance at the regular quarterly meeting, which included a gratifying showing of our lady membership.

A sound film in technicolor, "Textiles Unlimited," was presented through the courtesy of the General Electric Company, an educational presentation of G E's contribution to the textile industry. (The General Electric Company would be pleased to loan their film to any chapter for the nominal cost of shipping.)

Robert Butler, president of Dyecraft, Inc, was appointed Chairman of the Nominating Committee. Mr Butler will shortly present the membership with a list of candidates for office to be elected at our next meeting.

Respectfully submitted,
DAVID F DRISCOLL, *Secretary*

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Piedmont Section Meeting Report

Greenville, S C
February 3, 1951

AT THE annual meeting in Greenville, the Research Committee Meeting was conducted by Dr Harley Jennings. In addition to the regular members, there were 25 other interested people in attendance. Progress of the work to date on the Intersectional Contest Papers was discussed.

An Officers Luncheon was held and Edwin Briggs, Chairman of the Section, held a discussion of various problems of our section.

The Technical Session, beginning at 3 o'clock, was as follows, and attended by approximately 250 members:

First Paper: "Polyphosphates in Textile Processing" by Arthur H Razee, Manager of Chemical Sales and Service, Rumford Chemical Works, Rumford, R I.

Second Paper: "The PPG-IDL Color Eye—The Instrument and its Use in the Textile Industry," by Dr George P Bentley, President of Instrument Development Laboratories, Inc, New York.

At 7 o'clock the Banquet was held. The speaker was Rev Oran C Zaebst, who delivered a talk on the subject: "The Hobby of 80,000 American People."

W Carl Wilcoxson was in charge of arrangements.

Respectfully submitted,
W CHESTER COBB, *Secretary*

• PATENT DIGEST •

PAUL WENGRAF

SHRINKPROOFING WOOL—Impregnating with Resin Components, Mechanical Processing and Curing A, 2, 04

U. S. Pat. 2,522,338

(Eavenson & Levering Co.—American Cyanamid-Angus, et al.—Sept. 12, 1950).

Shrink- or feltproofing wool with resin condensates, e.g., methylated methylolmelamines, urea-formaldehyde and so on, has generally proved to be satisfactory when applied to *finished* (i.e., woven or knitted) goods. A serious problem is said to arise, however, in treating raw or partly finished woolen materials the same way. Although good shrinkproofness was observed in felting this material in a miniature felting machine, the shrinkage control was lost when the stock so treated was carried through a *mechanical stage* (i.e., spinning or carding.) This phenomenon is explained as strains set up in the fibers. In a subsequent washing process the fibers will move to relieve these stresses and the initial shrinkproofness will be destroyed. The solution to this problem was found by impregnating the raw stock or the woolen yarns with resin forming components (preferably methylated methylol melamine solutions) while carefully avoiding resin polymerization in this phase. The material is then dried at the lowest temperature possible (e.g., 100-160°F.) and to a wet pick up of 50%, carded, spun and woven in the case of raw wool) or knitted (in treated woolen yarns) and finally cured. The acid catalyst needed for curing (diammonium phosphate) may be added to the first impregnating solution; however, a more stable liquid is obtained by leaving out any catalyst at the start, mechanically processing the goods and finally curing in vapors of SO_2.

One of the examples calls for preparing woolen yarns with a solution of 25.6% methylated methylolmelamine, 0.96% diammonium phosphate and 0.10% dioctyl sodium sulfosuccinate as a wetting agent at pH = 7.0, centrifuging and drying at 100-160°F. to a moisture content of 10%. This yarn is knitted, dried again at 150°F. and cured at 200-450°F. Another example refers to a similar impregnating bath, omitting the catalyst and treating instead in a closed chamber with sulfur dioxide vapors before drying and curing.

EXPEDITED PATENT SERVICE

Patents listed in this issue, or any patent you may need, mailed within 24 hours of receipt of order, week ends and holidays excepted. Save 6 to 10 days with this special service to readers of AMERICAN DYESTUFF REPORTER. Patent number must be given, plus title or general subject. 50c per patent, 10c extra if wanted airmail. PATENT PROCUREMENT SERVICE, Box 4127 ADR, Washington 15, D. C.

References cited by the Patent Office, among others:

U. S. Pat. 2,329,622 and Re-Issue 22,566 (Cyanamid-Johnstone): impregnating wool material with alkylated methylolmelamine to obtain a shrinkproofing and antifelting effect.

U. S. Pat. 2,161,805 (Celanese—1939): stabilizing cellulose acetate by preparing with organic solvent solutions of resin components (urea-formaldehyde), followed by evaporating and curing.

U. S. Pat. 2,121,006 (Raduner, Bener—1938): obtaining an unshrinkable finish by impregnating with components of a resin, tentering, and then curing and washing.

U. S. Pat. 2,050,156 (Aspinook Co.—1936): slipproofing rayon by padding the cloth in a resin solution and then passing it through a tenter frame at curing temperature. The resin preferred is a product, "K I 206", of Resinous Products Co. (probably a urea-formaldehyde precondensate to which an acid catalyst is added).

Brit. P. 437,642 (Calico Print. Ass'n—1935): impregnating with a urea solution, drying and aftertreating with formaldehyde vapors to change affinity to dyestuffs and to obtain a permanent embossing effect.

STABILIZING CELLULOSE—Vinyl Sulfone Polymers Used. G, 2, 04

U S Pat 2,524,399

(U S Rubber Co—Schoene, Chambers—Oct 3, 1950)

Shrinkage of cellulosic fabrics (cotton, linen, rayon, etc) is prevented by wetting the fabrics with an aqueous solution of vinylsulfone — $(CH_2{:}CH)_2.SO_2$ — and then treating with an alkaline catalyst, likewise dissolved in water. Temperature ranges of 0-50° C are preferred, but higher temperatures up to 100° C can also be applied. It is assumed that two cellulose molecules are linked by one vinylsulfone radical, the reaction product corresponding to: Cellulose-O.CH_2-CH_2-SO_2-CH_2-CH_2-O-Cellulose.

Therefore, the cellulose molecules undergo a definite reaction resulting in changed properties. The fiber treated with vinylsulfone, followed or preceded by the alkaline catalyst treatment, is no longer soluble in cuprammonium or quaternary ammonium hydroxides. It is even possible to mix the catalyst and vinylsulfone because both substances react very slowly at room temperature.

An example is given in which a cotton fabric is immersed in a 2% aqueous vinylsulfone solution, squeezed to a 100% pick up, passed through an aqueous solution of 1% NaOH and 20% Glauber's salt, and squeezed again under less pressure than before. The fabrics are then allowed to stand for about 30 minutes at room temperature after which they are neutralized with acetic acid, rinsed and dried. Best results are obtained when no additional tension is applied to the fabrics in the drying procedure.

References cited by the Patent Office, among others:

U S Pat 2,427,640 (1947—Shell Development): sulfonyl containing dicarboxylic acids (e g, sulfonyl diglycollic acid) are reacted with unsaturated alcohols (allyl alcohol) to give clear resins after polymerizing.

U S Pat 2,243,630 (1941)—Rohm & Haas): polysaccharides (e g, cellulose or starch) are modified by an aftertreatment with formaldehyde, an amine and a pyrrhole. This results in animalizing or changing the dyeing properties.

U S Pat 2,103,879 (1937—I G Farben): higher vinylsulfones reacted with bisulfites to obtain sulfonic acids used as textile assistants in general.

U S Pat 2,069,774 (1937—Du Pont): organic sulfones or sulfoxides (e g, the dibenzylether of dihydroxy-diphenyl sulfone or methyl-beta-naphthylsulfone) are emulsified and used as durable delustering compounds, especially for rayon.

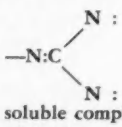
DIRECT DYES——Improving the Fastness with Basic Condensates and Copper Complex Compounds. C 4, 01

U S Pat 2,526,106

(Ciba—Albrecht, Frei, Landolt—Oct 17, 1950)

The aftertreating compositions protected by this patent contain as essential parts:

(A) basic condensates of formaldehyde with a compound characterized by the grouping



and

(B) water soluble complex copper salts.

Examples of ("A") are dicyandiamide, dicyandiamidine, biguanide or melamine. The copper complex compounds, ("B") comprise salts of bivalent copper, containing a base such as ammonia or amines (e g, tetrammine copper acetate, -sulfate or -sulfamate, diethylene diamine copper acetate, etc).

The advantage in using these mixtures is in a combined improvement of wash- and lightfastness. Although each of these components has been used separately hitherto either for improving the washfastness ("A") or the lightfastness ("B") it was not possible to combine ordinary copper salts with the resin precondensates in one single bath. In the case of mixing noncomplex copper salts the aftertreating bath was not sufficiently stable because insoluble products settled out. The complex copper compounds used, according to the present method, permit moreover the application of the reagents in alkaline media. Changes of shade often occurring in nonalkaline baths are therefore prevented, a fact which is most important when the goods are afterwards laundered in alkaline baths.

According to one of the examples given, copper acetate is mixed with ammonium chloride, anhydrous sodium carbonate and the water-soluble condensate of dicyanodiamidine and formaldehyde. Cotton yarn dyed with a direct azodye and treated for 30 minutes at 20° C in a 0.2% solution of this mixture shows a considerable improvement of fastness.

References cited by the Patent Office, among others:

U S Pat 2,364,726 (1944—Ciba): elimination of the impairment of fastness of direct dyeings aftertreated with condensates of formaldehyde and melamine or the like by combining the amine-aldehyde treatment with copper salts such as sulfate, acetate or chloride in one or two separate baths.

U S Pat 2,253,457 (1944—Courtaulds): acid solutions of condensates of cyanamide and formaldehyde used for pretreating cellulosic textiles to quite generally improve their affinity to dyes (Soledons, indigosols, azoic, sulfur, basic, direct, and acid).

U S Pat 2,148,659 (1939—Ciba): dyeing cellulosic fibers in fast shades with direct azodyes capable of forming metal complex salts and a metal salt (e g, chromium- or Cu- salt). The metal treatment and the dyeing process are conducted in one bath.

While separate treatments with copper salts and resin forming condensates have been frequently suggested (e g, Brit P 588,990, Geigy digested in *Am Dyestuff Reptr* 37, 136 (1948)), the main advantage of the present patent is evidently in the application of stable, alkaline combined solutions by use of copper complex salts.

CHINTZ EFFECTS—Ureaformaldehyde Preparations Mixed with Wetting Oils G, 2, 01

U. S. Pat. 2,524,915

(Jos. Bancroft & Sons Co.—Lippert—Oct. 10, 1950).

This patent refers to former publications which describe chintz finishes obtained by preparing the fabric with ureaformaldehyde precondensates plus a curing catalyst, drying at moderate temperatures and frictioning thereafter at about 400°F. to cure the resin and to glaze the fabric at the same time. It has been proposed that albumen be added to the solution to increase the strength of the fabric. As an example: an aqueous solution of 12.5% ureaformaldehyde 1.5% ammonium phosphate, 7.5% albumen and 1.5% ethylcellosolve as a softening agent.

This relatively high amount of albumen, which exerts a durable stiffening effect, seems to be objectionable. Thus, according to the present modification of this method, albumen has to be replaced by sulfonated castor oil or a similar product having wetting properties. Detergents or plasticizing agents are not within the scope of this invention. It is assumed that the sulfonated oil has the effect of inhibiting crystal growth, or at least making the crystals less sharp, further preventing the resin from sticking to the heated rolls. Another advantage is in the excess oil, which is applied in quantities up to 60% (from the resin's weight). This can later be removed by washing, but evidently an excess of hardened albumen cannot.

References cited by the Patent Office, among others:

U. S. Pat. 2,148,316 (Bancroft & Sons—1939): finishing chintz by using a special ureaformaldehyde condensate in a nonpolymerized state and glazing.

U. S. Pat. 2,108,806 (Du Pont—1938): preparing cellulose (paper) to be transparentized by incorporating a surface active agent, particularly an ammonium oleate solution, and impregnating with a resin coating composition.

U. S. Pat. 2,103,293 (Bancroft & Sons—1937): obtaining a chintz finish by impregnating a cloth with a water soluble ureaformaldehyde precondensate combined with a coagulable protein and glazing.

Reference is further made to Bancroft's U. S. Pat. 2,488,397 (AM. DYESTUFF REPTR. 1950, 201).

SHRINKPROOFING WOOL——Aminated Ethylene—Carbonmonoxide Polymers and Formaldehyde A 2, 04

U S Pat 2,526,637

(Du Pont—Cupery—Oct 24, 1950)

Mono-olefines, particularly ethylene, are polymerized at ratios of 4:1 to 11:1 with carbon monoxide, further hydrogenated and reacted with ammonia or amines to obtain polyamines in this reductive amination process. This method has been protected by Du Pont's U S Patents 2,495,255 and 2,495,286. High linear, or substantially linear polymers of a molecular weight of 1000 to 5000 result. They can be transformed, on the wool fiber in a subsequent reaction with formaldehyde, into water insoluble products by curing at relatively low temperatures. These polymers have H-atoms linked to the amino-nitrogen which contain at least 3 and not more than 50 C-atoms for each nitrogen.

The formaldehyde treatment may conveniently be carried out either simultaneously or in a separate step. These polymers generally dissolve well in dilute acids and the addition of formaldehyde gives quite stable solutions. (An excess of formaldehyde was found to be useful for insuring complete insolubilization). The impregnated wool should contain between 7-10% of the aminopolymer; overimpregnation is useless, sometimes even giving a poor handle. Impregnated specimens were tested in a "milling shrinkage" test (i e, in a treatment with soap and soda ash). This shrinkage has to be distinguished from the less important "relaxation shrinkage" due to a release of the mechanically stretched fiber by wetting with plain water.

An example given cites the use of a polyamine prepared by hydrogenating an ethylene-carbon monoxide copolymer in the presence of ammonia, and dissolving to a 5% solution in dilute (5%) warm acetic acid. About 35% formaldehyde (of the polymer) is added to this solution.

The impregnated wool fabric was air

dried, squeezed to a pick up of 8% polyamine and cured at 120° C for 15 minutes. The relaxation shrinkage was found to be 3% and the milling shrinkage 4%, while the corresponding figures for a nontreated sample were 10% and 40% respectively.

References cited by the Patent Office, among others:

U S Pat 2,406,958 (1946—Du Pont): shrinkproofing wool by reacting it with acrylonitril or styrene in anhydrous ether in the presenec of a small amount of iodine. *Am Dyestuff Reptr 36,* 37 (1947).

U S Pat 2,396,963 (1946—Du Pont): use of polymeric cyano ethylketone to form linear macromolecules. The products are used mainly as insecticides or in thermosetting compositions.

U S Pat 2,351,120 (1944—Du Pont): ethylene-carbon monoxide polymers reacted in alkaline solutions with aldehydes under pressure to give resins for molding and impregnating purposes.

U S Pat 2,329,622 (1943—American Cyanamid): shrinkproofing wool by applying alkylated methylolmelamines. (cf, among others, Brit P 583,428, *Am Dyestuff Reptr. 36,* 438 (1947).

U S Pat 2,302,332 (1942—Du Pont): applying linear superpolyamides as coatings by dispersing in a liquid, which is a nonsolvent at room temperature but which is finally evaporated at elevated temperature (e g, furfurylalcohol).

ABSTRACTS

Sunlight, Weather and Fabrics

I Teplitz, *Textile Bulletin* 76, 85-7, November, 1950.

In the use of draperies, curtains, awnings and upholstery for outdoor and porch furniture, the effect of sunlight, weather and exposure to the elements is the prime consideration of the value of the fabrics used.

Wool is considered to be the most resistant of fibers to light, ultra-violet and infra-red rays, while silk and jute are considered to be the least resistant. Nylon is not particularly resistant and this depends upon whether it is of bright or dull luster and the type of nylon. Cotton and the synthetic rayons and linen are all classified in a group between wool and silk. Bleached cotton cloth deteriorates faster than unbleached cloth; gray materials are bleached by sunlight while bleached materials are yellowed by the sun. Viscose rayon is more resistant to light than bleached cotton; however, dull rayon does not stand up well in a moist atmosphere, due to the presence of the delustering agent, titanium oxide. Aralac has a rating similar to wool and vicara is rated about the same as to resistance to light rays. Saran and the other resin type fibers have very good resistance to light. Fiber V and Orlon are said to have special light resistance and weathering qualities, and it is anticipated that these fibers will have a special place in the drapery, curtain and upholstery field. Orlon looks like viscose rayon, has the strength and qualities of nylon, and is the fiber to watch.—WHC

Absorptiometric Colorimetry

C H Giles, *J Soc Dyers Colourists* 66, 615-29, December, 1950.

A series of solutions of a colored substance may be compared and their strengths exactly measured relatively to each other by comparing their transmissions of light, or the inverse (i e, their absorptions). The process is termed *absorptiometric colorimetry* and the instruments used are known either as *absorptiometric colorimeters,* or *color comparators, filter photometers, absorptiometers,* or simply *colorimeters.* In such measurement it is not usually necessary to determine the light absorption at every part of the spectrum. If such information is required, it may be obtained by using a *spectrophotometer,* an instrument in which white light is divided into a spectrum by a prism. A spectrophotometer can be used also as an absorptiometric colorimeter, by setting it to measure light absorption at a given wave-length, chosen according to the characteristics of the solutions under test, and examining their absorptions at this wave-length.

Normally, however, specially designed instruments are employed for absorptiometric colorimetry. In these the required comparisons are made either by direct visual observation, or by the action of the transmitted light on a *photoelectric cell,* which is a device giving an electric response varying with the intensity of the light falling on it. The photoelectric type of absorptiometric colorimeter has now become an important item of equipment in laboratories where chemical analyses are performed. Many analytical methods are simplified by its use, enabling economies in time and materials to be effected. It is widely used in routine medical and biological testing, in many forms of organic, metallurgical, and general inorganic analysis, and in the color-making and color-using industries. It is also of importance as an analytical instrument in many forms of scientific research.

The author has attempted to bring together, for the benefit of the many users who may not have the time and facilities to consult all the original sources, a short account of the basic principles of the operation and construction of absorptiometric colorimeters, and of their historical development, and to offer a guide to the wider literature on the subject. Descriptions are given of the Beer-Lambert laws, photoelectric cells and absorptiometric colorimeters incorporating them, the various types of visual comparison instruments, apparatus for making continuous measurements, the reasons for the use of color filters and their correct selection, the determination of colored substances in mixed solution, the accuracy of absorptiometric colorimeters, desirable future developments, and terminology.

Eighty-five references to the literature are cited.—WHC

The Dyeing of Terylene Polyester Fiber

E. Waters, *J Soc Dyers Colourists* 66, 609-14, December, 1950.

This is the most complete account to date of the dyeing properties of Terylene. The author states that like nylon, Terylene has high tensile strength, is very resistant to chemical and bacterial attack, is circular and uniform in cross-section, has low absorption, and is capable of being set. The two fibers are not identical in these properties, however, and in many other respects are widely different. For example, Terylene is stronger and has a lower moisture absorption. The main physical features in which Terylene differs greatly from nylon are density, elasticity, handle, and resistance to degradation by light. Terylene is much denser (sp gr 1.38 as compared with 1.14), does not stretch as readily, is more pleasant and less cold to the touch, and is much less affected by prolonged exposure to light. From a

practical point of view, perhaps the most important difference between the accepted textile fibers and Terylene lies in its resistance to dyeing.

Only the acetate rayon dyes show any appreciable substantivity for the new fiber, and even these have poor affinity. The cause of this poor dyeability is the slow diffusion of the dye into the fiber. Many attempts have been made to improve this condition by the addition of dyeing assistants (phenolic substances, primary amines, hydrocarbons and ethers) but the results have been unsatisfactory, partly due to the difficulty of washing out the assistant after dyeing. A list of selected acetate dyes is given, and it is recommended to keep the temperature as near the boiling point as possible.

For heavy shades, which are impossible when using acetate dyes, a modified azoic process is described. The normal process of first applying a naphthol and then aftertreating with a diazotized base resulted in no coloration. The same was true when the base and naphthol were applied together as dispersions and coupled *in situ*. It was finally considered that the lack of success might be due to the high molecular weight of the naphthols, whose affinity was offset by a very slow rate of diffusion or even inability to enter the fiber. Attention was then given to smaller and simpler naphthols such as α-naphthol, β-naphthol, and 2-hydroxy-3-naphthoic acid. Immediately good results were achieved by the technique of applying the amine and naphthol as dispersions and subsequently diazotizing. It was necessary, however, to carry out the diazotization hot in order to get satisfactory results.

Of the naphthols tried, the 2-hydroxy-3-naphthoic acid proved to be the most suitable. A selected list of bases recommended for this process is given. Even dark navy blue and black shades of good fastness may be produced in this way.

(Note: Terylene, made by ICI, has the same chemical composition as Fiber V, made by Du Pont).—WHC

The Function of Dyeing Assistants

R A Lindenmaier, *Canadian Textile J* 67, 45-7, December 22, 1950.

One of the first types of dyeing aids used in wool dyeing was pyridine and pyridine derivatives. Their function consisted primarily in bringing about more gradual liberation of the acid and in this manner they assisted both in leveling and in penetration. Compounds of this nature are still in use today.

Sulfonated oils may also be used as dyeing assistants. These products compete with the dyestuff. They have the property of drawing onto the wool first, and then are gradually replaced by the dye, thereby slowing down the rate of dyeing.

More recently a considerable amount of attention has been given to the particle size of the dyestuff molecule. A dye when dissolved may have particle sizes which are too large, in which case it will be found difficult to obtain satisfactory penetration. Again, some colors may have a fine particle size immediately after dissolving, but through the addition of acid or other agents essential for the dyeing, aggregates may be formed which make it difficult to obtain satisfactory dyeing. The question will be to find a suitable agent to prevent the formation of these aggregates.

The most important assistant in acetate dyeing is the so-called gas inhibitor, for which there is still a great demand, particularly for shades in which blue dyes have to be used. Products are available both of the type which are not wash-fast and of the durable type which will stand both washing and dry cleaning.

Perhaps one of the most important requirements in the dyeing of viscose piece goods is to ensure proper lubrication of the fabric during the dyeing process in order to prevent crack marks and chafe marks. The author discussed at some length two typical dyeing assistants, a sulfated ester and an acid amide, which he stated would assist in overcoming these troubles.—WHC

A Multiple Culture Technique for Testing Rot-Resistance, Particularly Suited to Jute Materials

S N Basu, A P Bhattacharyya, and R G Bose, *J Textile Inst* 41, T466-80, December, 1950

Although the need of good rot-resistance tests for textile materials is recognized by all workers, there is no general agreement as to the method that would best suit the purpose. Outdoor exposure to weather and soil burial had been almost the only available means of test until, recognizing the advantages of controlled conditions, Thom, Humfeld and Holman proposed a laboratory test using a pure culture of *Chaetomium globosum*. Since then the test has been improved in technique and adopted, mostly in conjunction with soil tests, by various institutions in the USA, such as the ASTM, the AATCC, and the US Army Corps of Engineers. However, different organisms have found favor with other workers.

A new method for the evaluation of rot-resistance of textile materials is described in this paper. This has been designed primarily for application on jute materials, and to overcome the drawback of fungal specificity towards antiseptics inherent in any single culture test. It involves simultaneous inoculation with five species of fungi, which occur frequently in mildewed jute materials and possess marked jute-tendering abilities. The conditions evolved and the technique of exposing the test specimens to rotting favor rapid growth and loss in strength. In experiments with rotproofed materials, this method gave results comparable with those of several other methods of test, including soil incubation, whereas a single culture method failed to do so.—WHC

Some Problems of Dyeing Synthetic Fibers. Part XI.

A G Tyler, *British Rayon & Silk J* 27, 57-8, December, 1950.

The author discusses the dyeing of nylon with acid dyes, and points out that the more sulfonic acid groups that are present in the dyestuff molecule, the smaller will be the amount of dyestuff which will saturate the nylon; so that, as far as possible, monosulfonated acid dyestuffs should be used for this purpose. He states that the affinity of the dye for the fiber increases with increasing size of the molecule, so that the more complex an acid dyestuff, the better it will dye nylon, provided it contains only one sulfonic acid group.

Mordant colors applied by the after-chrome process have similar affinity to that of acid colors, but a larger percentage of chrome is required than on wool, and the development of the shade takes place much more slowly. Formic acid is normally used for the dyeing and after-chroming, and a subsequent treatment with sodium thiosulfate will remove any excess of bichrome.

Logwood may be used to produce excellent blacks on nylon, by either the after-chrome or the chrome mordant process. In the former case the nylon is dyed in a neutral bath with hematine crystals, washed off well, and after-chromed in a bath rendered distinctly acid with acetic acid, the time required being the normal ½ to ¾ hour. When dyeing is done on a chrome mordant, the chrome is reduced by the addition of formic acid, the hematine being applied from a neutral bath.

Azoic colors are produced on the fiber by impregnating the nylon with both naphthol and base at a high temperature and then diazotizing, first cold, and gradually raising the temperature.

The author recommends dyeing vat colors at 90-95°C, using sulfoxylate instead of hydrosulfite, and an excess of caustic soda. The light fastness, however, is poor. He concludes with a brief reference to the dyeing of Terylene and other synthetic fibers.—WHC

NEWS

Mutual Chemical Company of American Plant on Baltimore Harbor

The largest of the new structures on the right is the sodium bichromate plant. In the new building in the left foreground, other chromium chemicals are manufactured from sodium bichromate

• Mutual Operating New Chromium Chemical Plant

Mutual Chemical Company of America has substantially increased its productive capacity for sodium bichromate and other chromium compounds with the completion of a new chromium chemical plant on the Baltimore harbor. Adjoining facilities previously constructed, the new unit is now reported to be among the largest and most modern of its kind. Operations have already begun in order to meet an exceptionally heavy demand, a partial result of extended soda ash strikes in 1950.

• New Fabrics Conference Attracts More Than 900

More than 900 textile technologists and chemists were on hand last month to hear representatives of the Air Force, Army and Navy orient the textile industry on their needs at the AATT-sponsored conference on "New Fabrics for the Armed Forces." The meeting was an all-day affair held at New York's Hotel Commodore and is believed to have been one of the largest gatherings of its kind.

Eight speakers provided the basis for a technical program of ten papers. Speakers remarks were supplemented by an industry technical panel of twenty-four outstanding figures from various phases of the industry, including AATCC president C Norris Rabold. Members of more than 15 trade groups as well as AATT members helped swell the audience.

Dr Milton Harris of the Harris Research Laboratories, discussion leader, lauded the Office of the Quartermaster General with "development into probably the greatest single force in textile research in this country."

Andrew E Buchanan, Jr, assistant general manager of du Pont's Rayon Department, luncheon speaker, struck the tempo of the oncference, the core of his talk being aptly summed up: "There is a job to be done. Functionality is the keynote and performance is the payoff."

Speakers included:

Dr S J Kennedy, Director of the Textile, Clothing & Footwear Section, Research & Development Branch of Military Planning Division of the Office of the Quartermaster General, U S Army—"The Importance of Conservation to the Textile Industry and the American Public."

Dr Reinhold Stoll, Fabric Development Engineer, Textile Materials Engineering Laboratory, U S Army—"Wear Resistant Fabrics" and "Military Characteristics of Wool Textiles."

Allan McQuade, Head of the Textile Functional Finishes Laboratory, U S Army—"Lightweight Fire Resistant Treatments for Clothing and Tentage."

Donald Huxley, Chief of the Clothing Branch of the Aero-Medical Laboratory, U S Air Force—"Clothing Requirements Peculiar to the Air Force" and "Development of Synthetic Fur."

Louis I Weiner, Head of the Textile Materials Engineering Laboratory, U S Army—"Some Principals of Construction of Water Resistant Fabrics."

Thomas J Seery, Head of Clothing Branch, Research & Development Division, Bureau of Supplies and Accounts, U S Navy—"Military Underwear."

William A Corry, Chief of the Textile Unit, Air Materiel Command, U S Air Force—"Textile Problems Peculiar to Parachutes."

J Press, Naval Clothing Depot, Bureau of Supplies and Accounts, U S Navy—"Insulating Materials for Arctic Clothing and Sleeping Bags."

Members of the Industry Technical Panel included the following:

Bert Bertelsen, Botany Mills, Inc.
William Whitehead, Celanese Corp of America.
Rudolph E Semmler, The Duplan Corp.
Walter E Scholer, American Viscose Corp.
George A Slowinske, E I du Pont de Nemours & Co, Inc.
Gerard K Lake, Pepperel Manufacturing Co.
Richard T Kropf, Belding Heminway Co, Inc.
Herbert F Schiefer, U S Bureau of Standards.
Dr John Dillon, Textile Research Institute.
Norris Rabold, The Erwin Mills, Inc.
Roy A Cheney, Underwear Institute.
Dr Edward Rugeley, Union Carbide & Carbon Corp.
Walter J Hamburger, Fabric Research Laboratories, Inc.
Carl I Taber, E I du Pont de Nemours & Co, Inc.
M Earl Heard, West Point Manufacturing Co.
Henry C Froehling, E I du Pont de Nemours & Co, Inc.
Dr J Robert Bonnar, General Dyestuff Corp.
Julius B Goldberg, J P Stevens & Co, Inc.
Harry B Benson, Cheney Brothers.
Ralph M Gutekunst, Hellwig Dyeing Corp.
John F Hagen, Callaway Mills, Inc.
John J Goldsmith, Hess, Goldsmith & Co, Inc.
James A Jonas, Pellissier, Jonas & Rivet, Inc.
Giles Hopkins, Wool Bureau, Inc.

• Trade Fair Dates Moved Up

Directors of the 2nd United States International Trade Fair, originally scheduled for September 8-23 in Chicago, and postponed because of unsettled world conditions, hope to hold it in March of 1952, according to Col. John N. Gage, managing director.

Col Gage will soon become assistant to the executive director of the Better Government Association, it is reported, but he is continuing his connection with the fair.

• "The Du Pont Story"

The highlights of a rich 149-year history of E I du Pont de Nemours & Company have been recorded in a 72-minute technicolor motion picture entitled "The Du Pont Story", which emphasizes the people, policies, practices, philosophies, and products responsible for the "story". The film, produced in California and at numerous plants and offices of the company with a cast of 225 Hollywood actors and actresses, required a total of 91 different sets at the studio. Many were replicas of places in Wilmington, such as the first office building and the first home of the company.

The picture opens with the present-day activities of the company, but quickly flashes back 149 years and shows how E I du Pont de Nemours, the young French immigrant, got his start. From there on, the administrations of Du Pont's ten presidents form convenient chapters for telling the story.

Among the milestones depicted is the establishment of the present organization of the company and the shepherding of the dyestuffs venture to ultimate success.

Though the first eight presidents of the company are portrayed by Hollywood actors, the ninth and tenth (namely, Walter Carpenter and Crawford H Greenewalt) and members of the Executive Committee play their own roles. Mr Carpenter led in carrying out the burden of the company's vast World War II effort. After initiating another great expansion following the war, he handed over the reins to Crawford H Greenewalt early in 1948.

• Construction on Celanese Canadian Plant Set

Celanese Corporation of America will shortly begin construction of a large petrochemical and cellulose acetate plant in the Edmonton area of Alberta, Canada, aimed at materially accelerating the defense programs of both United States and Canada, according to an announcement by Harold Blancke, president. A new Celanese affiliate named Canadian Chemical Company Ltd has been formed in Alberta to build and operate the plant on a site already selected.

Among the many basic organic chemicals to be manufactured at the new plant, the acetic acid reportedly will be combined with wood pulp from the Columbia Cellulose Company Limited plant at Prince Rupert, B C, to manufacture cellulose acetate. Columbia is also a Celanese affiliate.

Mr. Blancke recently stated: "The chemical needs of expanding Canadian defense plants will be supplied to an important extent by products from the new Edmonton plant. Such products will include formaldehyde, methanol, propylene glycol, and other alcohols and solvents, none of which are now produced in Canada. Acetaldehyde, acetic acid, anhydride and acetone also will be produced in large volume."

Formaldehyde, normally sold in the United States as a 37 per cent solution in water, will reportedly be produced at the new plant in a solid form known as paraformaldehyde. This type of material, the large scale commercial production of which was recently commenced by Celanese, contains essentially no water and is designed to simplify handling and shipping problems, as well as to afford economies at consuming plants.

• Sarett to Receive ACS Section Award

Dr Lewis H Sarett, Merck & Co, Inc, will receive the annual award of the North Jersey Section, American Chemical Society for 1951 at a dinner meeting of the section in Newark, April 23. The recipient of the honor, known as the Leon Baekeland Award, consisting of a gold medal and $1,000, was made known by Dr. George L. Royer, chairman of the section.

Dr Sarett has been cited for "outstanding achievement in creative chemistry" for his discovery of cortisone.

Sponsor of the award is the Bakelite Division, Union Carbide & Carbon Corp.

• Du Pont Improves Hydrogen Peroxide Production

An improved process for commercial production of hydrogen peroxide, a culmination of six years of research, is reported to have been developed by E I du Pont de Nemours & Company, though details of the process have not been disclosed. The company has announced that it would build its first production unit at Memphis, Tenn, at the same site where a unit for production of sodium cyanide is under construction.

Du Pont, within the last ten years, has developed the use of hydrogen peroxide extensively as a bleach for paper pulps, to supplement its familiar uses as a bleaching agent for natural and synthetic fibers. Plants for its production at present are maintained at Niagara Falls and Dresden, N Y.

The new plant, the first of its kind to be built in the South, will be located on a 225-acre site at Fite Road and Route 51, about 10 miles north of the center of the Memphis business district. Both the hydrogen peroxide and sodium cyanide units will be operated by Du Pont's Electrochemicals Department. Both units will reportedly be of the modern open-air type of construction. Construction is under the direction of the company's Engineering Department.

James J McIntyre, who will be manager of the new plant, has stated that completion of both units is scheduled before the end of 1952. He also stated that the hydrogen peroxide unit will employ about 75 persons in addition to the 180 needed for the manufacture of sodium cyanide.

• Fiber V Becomes "Amilar"

"Amilar" is the trade-mark the du Pont Company has adopted for its highly publicized synthetic polyester textile fiber, which it has been evaluating since 1946 under the laboratory designation of Fiber V. Technically, the material is a condensation polymer obtained from ethylene glycol and dimethyl terephthalate.

It is reported to have high tensile strength and high resistance to stretching —both wet and dry—as well as good resistance to degradation by chemical bleaches and to abrasion. Most of the fiber's properties are equally good under wet or dry conditions. Fabrics made of "Amilar" have excellent resilience and resistance to wrinkling, launder easily, dry quickly, and can be heat set, it is reported.

Limited quantities of window curtains, blouses, shirts, sewing thread, and suitings made from "Amilar" are currently being tested. The items were marketed under the laboratory designation "Fiber V." In the industrial field, evaluation is also being made in fire hose, V-belts, and other applications.

It is possible to produce the fiber in a wide range of filament deniers, and quantities of both continuous filament yarn and staple required for development work are being made in an experimental operation at the Seaford, Del, plant of the Nylon Division.

Announcement was made in December, 1950, of plans to use a 635-acre tract on the Neuse River, near Kinston, N C, for the manufacture of "Amilar" polyester fiber. Design of the plant is under way and construction is expected to start sometime this year.

The Kinston plant will be supplied with DMT (dimethyl terephthalate) through the company's Repauno plant at Gibbstown, N J. The principal manufacturing at the Repauno plant now is the production of commercial explosives, but plans for expansion of chemical manufacturing facilities have been announced. Construction is expected to start in May under the direction of Du Pont's Engineering Department, with operations slated to begin by the end of 1952.

• Beitzel Predicts 2½ Million-Ton Chlorine Output for 1951

George H Beitzel, president of the Pennsylvania Salt Manufacturing Co, predicted an annual chlorine output of 2,500,000 tons compared to 1,800,000 in 1950 in a recent speech before the Philadelphia Chamber of Commerce.

Referring to firms providing chemicals for the textile industry, he pointed to that industry's reliance on synthetic or chemical fibers. This, plus the great diversification in the chemical industry guarantees that it will be some time before demand catches up for chemical products, Mr Beitzel stated.

• Hunter Named NATMM Director

James H Hunter, vice-president of the James Hunter Machine Co, North Adams, Mass, was recently elected a director (Division 4—dyeing, bleaching and finishing machinery) at the annual meeting of the National Association of Textile Machinery Manufacturers in Boston.

• NPA Considers General Chemical Allocation Order

Officials of the National Production Authority, U S Department of Commerce, informed producers of naphthenic acid last month that a general chemical allocation order is being considered which would regulate distribution of scarce chemicals to defense and civilan industries.

The naphthenic acid producers, members of an industry advisory committee, said some manufacturers now are overloaded with DO orders which demand a specific grade of acid, which results in reduced supplies available to nonrated but essential industries. They recommended that NPA allocate the chemical on an end-use basis at the supplier level and equitably distribute defense orders.

NPA said that such distribution could be provided for in an addition to the chemical allocation order, under which scarce chemicals would be regulated as the need arises.

Committee members said naphthenic acid normally is produced as a by-product recovered from crude petroleum and that the supply is not easily regulated.

Naphthenic acid is used among other things as an agent in cleaning and degreasing compounds, textile treating, cutting oils, mildew proofing, and high-pressure industrial and automotive lubricants.

L A Schlueter of NPA's Chemical Division presided at the meeting.

• Hercules Experiment Station Addition

Hercules Powder Company has announced the completion of a three-story addition to the main laboratory building at its Experiment Station near Wilmington, Del, the major project in a series of expansions made during the past five years. The addition provides 26 new laboratory units accommodating 51 chemists and increases the research facilities of the main building by more than 60 per cent, it is reported. It is also reported to contain two new air-conditioned laboratories for the testing of paper and textiles.

Construction of the extension was started in November, 1949. The exterior and interior are identical with that of the original structure though some changes in laboratory design permit more effective use of the floor area.

Occupation of the new wing is said to be a part of a program to centralize and improve the facilities of the various divisions of the Experiment Station, which includes the assignment of an auxiliary building to provide for the expanded needs for application research on new chemicals. The analytical division has acquired two laboratories to house the micro analytical research and the physics division—two laboratories, one for spectrometry and the other for a newly-acquired mass spectrometer.

• NPA Acts to Maintain Zinc Dust Supplies

The National Production Authority issued order M-37 last month to maintain supplies of zinc dust, used in the manufacture of hydrosulfites. The new order limits zinc scrap inventories and regulates scrap toll agreements in an attempt to prevent excessive conversion of scrap into slab zinc at the expense of the zinc dust supply. It also prohibits delivery or acceptance of zinc scrap for converting, remelting or making other arrangements whereby the owner retains possession after the processing.

• Safety Council Announces Textile Division Award Winners

The National Safety Council, in announcing the results of the 1950 textile industry safety contest, significantly points out that most of the contestants finished with lower rates than a year previous.

Of 162 enrolled in the contest in January, 1950, 23 dropped out. The 139 who finished reported a total exposure of over 312 million man-hours and had experienced 1849 injuries during the year. The 1950 exposure was 47 per cent higher than was reported at the end of last years' contest, and the reported injuries were up 42 per cent this year.

It was only because of the increased exposure that the final frequency rate was lower this year. The final rate of 5.91 was three per cent lower than the 1949 final rate.

Division I (entire companies) had as individual first-place winners the Forstmann Woolen Company, Passaic, N J; the Union Bleachery, Greenville, S C; and Clark Thread Company, Thomasville, Ga.

Division II (individual mills) had nineteen mills, scattered among three groupings, reporting an entire year's operation without an injury; these plants operated over 14 million man-hours.

Special awards for reducing the injury frequency rate and for achievement of perfect records by companies reporting less than 72,000 man-hours were also set up by the Council.

First place winners will receive a trophy. Winners of second, third and special awards will receive certificates.

• Hosiery Course by Mail

Arrangements have been made to reproduce the lectures of the Hosiery Course sponsored by the New York Association of Hosiery Mill Salesmen so that the course can be taken by correspondence by those interested outside New York. Lessons, charts, etc, and samples (wherever possible) will be mailed to correspondence students. Tuition fee is $50.00, which includes registration and incidental costs such as charts, pamphlets, movies, etc.

Lectures for the Spring 1951 term began on February 13 with George A Urlaub, noted consultant and technical advisor on knitting and its products, giving the course.

The course consists of a series of 15 weekly lectures and field trips, covering all phases of making and marketing hosiery, from fibers and yarns, through machines and products. Studies of samples, technical charts, films, etc, are augmented with field trips to nearby plants for study of actual mill operations.

The course covers: fabrics; fibers and yarns; yarn classification and numbering; twists and effects; types of hosiery; shaping; proportioning and constructions; gauges and needles; machine influence upon product; process flow and quality controls; patterns; laces and nonruns; dictionary of terms.

Enrollment blanks and other information may be obtained from Harry R Roth, Suite 2822, 350 Fifth Ave, New York 1, N Y. Mr Roth is Chairman of NYAHMS' Educational Program.

• ASLB Seeks Textile Committee

The textile industry has been invited to participate in the activities of the American society of Lubrication Engineers through formation of a committee. It is reported that Herbert L Orstein, Pacific Mills Worsted Division, has been named by ASLE to further such a formation.

The activities of the ASLE reportedly would not duplicate work of the ASME or other technical societies, but would supplement it with more specialized work within the lubrication fields.

The society will include a symposium on textile lubrication which will be part of their annual meeting to be held at the Bellevue-Stratford Hotel in Philadelphia, April 16 to 18. The textile session will be held on Tuesday, April 17, from 9 a m to 12.

Inquiries or applications for membership in the ASLE may be directed to W F Leonard, National Secretary, American Society of Lubrication Engineers, 343 South Dearborn Street, Chicago 4, Ill.

• 14th Course in Textiles & Testing Techniques

The United States Testing Company, Inc and Teachers College, Columbia University have scheduled the annual Summer Refresher Course in Textiles and Testing Techniques (s-275) during the second half of the Summer Session, July 23 to August 10, 1951. This summer will mark the fourteenth anniversary of the course, conducted by the United States Testing Company, Inc, at their main laboratories in Hoboken, New Jersey. It also marks the second year Teachers College has accredited the course for 3 point credit toward a degree.

This comprehensive three week course is open to representatives in the field of home economics, education, retailing and others who have had some elementary textile training. Through lectures, demonstrations, and practice sessions, students cover all phases of analyses on textiles and related merchandise, identification of fibers, dye chemistry, detergency, and research. Special emphasis will be given to the various textile processing and finishing techniques, with field trips planned for those students who are interested.

A nominal fee will be charged to cover the cost of supplies, literature, and samples necessary for the laboratory work. Classes will be in session from 9:00 a m to 4:00 p m.

For further information and application forms, write to: Miss Dorothy McDonald, Director, Consumer Service Division, United States Testing Company, Inc, 1415 Park Avenue, Hoboken, New Jersey.

• Explosion Rocks Heyden Resorcinol Plant

An exlosion of unknown cause partially destroyed the resorcinol plant of the Heyden Chemical Corporation at Garfield, New Jersey at 11:15 a m on February 26th. Only one employee, A Downie of Krakow Street, Garfield, was injured, but not critically. Prompt action by the Heyden plant fire department and the Garfield fire department had the fire under control in 25 minutes. Much of the equipment can be salvaged, according to Heyden engineers, and loss is reportedly covered by insurance.

Production schedules on other products were not affected in any way by the temporary loss of the resorcinol plant, according to John P Remensnyder, Heyden president.

In addition to the excellent work of the Heyden and Garfield fire departments, Mr Remensnyder gave special commendation to Fred Buffa, who saved Mr Downie's life by dragging him from the flames.

Due to the importance of resorcinol in the defense program NPA authorities have reportedly assured Heyden that reconstruction will be expedited.

No cause for the explosion has yet been determined.

OBITUARY

Lewis M Fowler

LEWIS M FOWLER, 66, president of Palatine Dyeing Co, Inc, St Johnsville, N Y, died last month in Cooperstown Hospital following an illness of approximately two years. Mr Fowler entered the dyeing and finishing industry in the 1920's at Palatine Bridge, N Y. Over the past 30 years, Mr Fowler led the development of Palatine into one of the country's largest dyers and finishers of warp knit fabrics.

PERSONNEL

J M NYKIEL has been appointed sales manager of the Industrial Department of the Colgate-Palmolive-Peet Company. He is succeeded as division manager of the department's Chicago Division by W E HUMPHREYS.

Having joined the company as a clerk in the home office in 1931, Mr Nykiel was appointed industrial salesman for Chicago seven years later. He also has held the position of industrial supervisor. Mr Humphreys was employed by Colgate in 1942 as an industrial salesman in the Chicago Division and was appointed supervisor of that division two years ago.

W E Humphreys

J M Nykiel

Stein, Hall & Company, Inc. has announced the election of JOHN C DALY and DAVID McGILL to its Board of Directors. Mr Daly is vice president and manager of the Burlap Department and Mr McGill is president of Stein-Hall Limited of Toronto, a Canadian subsidiary.

J HERBERT BABCOCK was elected a vice-president of the Hooker Electrochemical Company at the annual meeting of the board of directors. The announcement was made by R L Murray, president of the company, who at the meeting appointed Mr Babcock as vice-president in charge of development and research. At the same meeting, CHARLES H WINKLER was made assistant treasurer of the Hooker Company and THOMAS F WILLERS was made comptroller.

Mr Babcock started with the Hooker Company in 1916 as a research chemist and was engaged in both production and sales of fine organic chemicals until he became manager of research in 1933. Ten years later he was appointed manager of development and research. Mr Winkler started with Hooker in 1936 in their accounting department. From 1941 and up to his present promotion he has been cost accountant. Mr Willers, with the company since 1941, was formerly cost analyst for the operation department.

Henry L Pero

HENRY L PERO has joined the Textile Fibers Department, Carbide and Carbon Chemicals Company, a division of Union Carbide, where his work will be concerned chiefly with military and civilian applications of woolen- and worsted-spun dynel yarns. Mr Pero, a graduate of Lowell Textile Institute in 1941, has wide experience in the technology of woolen and worsted yarns, having been associated with Lowell for the past nine years, first as an instructor, then as Assistant Professor, and also with four industrial firms.

In his capacity as Assistant Professor in the Woolen and Worsted Department at Lowell Textile, Mr Pero has done research and consulting work on processing and testing of a variety of staple fibers spun on the woolen system. He is a member of the American Association of Textile Chemists and Colorists and of the National Association of Woolen and Worsted Overseers. In his new capacity with Carbide, he will remain in New England.

ELDON STOWELL has resigned as manager of the Development of Textile Fibers Department, Carbide & Carbon Chemicals Division of Union Carbide and Carbon Corporation to join Ware Knitters, Ware, Massachusetts. Mr Stowell will also be an officer of Gilbertville Mills, a screen printing company, and expects to open an office in New York this month.

Mr Stowell was formerly with Carbide & Carbon five years, Tubize Rayon Corporation as assistant manager of sales service for three years and American Viscose Corporation as assistant manager of acetate sales for more than three years.

Bryant Chemical Corporation, North Quincy, Mass has announced the addition to their sales personnel of JACK JONES, formerly of the Minneapolis sales division of the Scranton Sales Company. Mr Jones will handle Brytex Specialties in Rhode Island and Southern New England.

ABRAHAM J COHEN, vice president in charge of cost system, policies and sales for the Atlantic Dye Works Company, retired on February 23 after 30 years in the dyeing industry. Mr Cohen was active in the New York market not only in the dyeing and finishing field, but in many other phases of the textile industry.

Continuously connected with Atlantic since its founding by his brother Harry in 1932, Mr Cohen started to devote full time to the firm in 1940. Harry Cohen died in 1938.

Sale of stock in the company by Mr Cohen and his wife, Jeannette, gives sole interest in the company to his brother Herman and sister-in-law, Jean.

As Chairman of the Cost Committee for the Dyeing and Finishing Industry of the United States by direct appointment of the president of the Silk and Rayon Dyers Association of America, he published a book for the dyeing and finishing industries called "Uniform Cost Methods." Mr Cohen is also noted for his establishment of the "Atlantic Dyegest," a monthly publication of news interest.

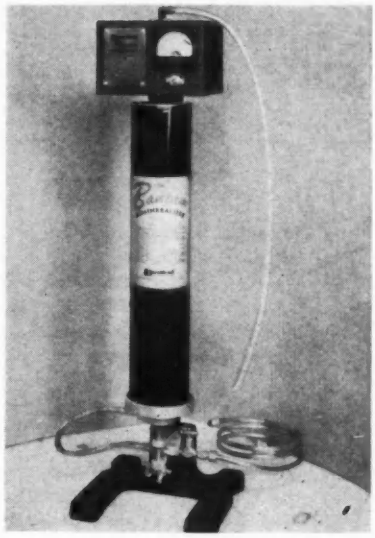
ROBERT W BREWER, president of Line Chemical Corp, recently returned from Germany where he visited a number of dyestuff and chemical manufacturers in connection with new developments and supplies of these materials.

HERMAN A DICKERT, director of the textile school, Georgia Institute of Technology, has been named secretary-treasurer of the Textile Operating Executives of Georgia, according to an announcement by H M Jackson, general chairman of the association. Mr Dickert succeeds ROBERT W PHILIP, of LaGrange, Ga, who has been secretary-treasurer of the organization continuously since its inception in 1922. Mr Philip is vice-president and director of research of Callaway Mills Company, LaGrange.

NEW PRODUCTS

• Diazophenyl Red S5B

Geigy Company, Inc, has added to its developed color line Diazophenyl Red S5B, a dyestuff of high tinctorial power with excellent fastness to washing and moderate resistance to light. Brilliant shades of red are reported produced economically on cotton and viscose rayons with great depth. In this respect, the company states, Diazophenyl Red S5B when applied to cotton is superior to Primuline.



Barnstead Bantam Demineralizer

• Meter Added to Bantam Demineralizer

A direct reading meter to indicate water purity has been added to the Bantam Demineralizer, a product of Barnstead Still & Stirilizer Co, 2 Lanesville Terrace, Forest Hills, Boston 31, Mass.

The product, complete with a needle tyep regualting valve for easy flow adjustment, a drain valve and a base for bench mounting, is calibrated in parts per million and also in ohms electrical resistance. The base is removable if wall mounting is desired.

Bulletins are available from the manufacturer or from laboratory supply dealers who also stock the replacement high capacity cartridges.

• Precision Platinum Thermometer

Weiller Instruments Corporation, 95 Broad Street, New York 4, N Y, has disclosed details of its precision Platinum Thermometer for high temperatures. It consists primarily of pure platinum wire embedded in a nonreactive ceramic matrix.

Precision measurements reportedly can be made to 1400°C with the thermometer remaining operative to 1600°C. It is mounted in a stainless steel tube ¼" O D 14¼" long for temperatures up to 1000°C; for higher temperatures it comes in a variety of ceramic tubes. Ice resistance is reported to be 10 ohms.

Weiller states that the instrument maintains its insulating properties throughout. Four leads are supplied.

• GDC Reveals Continuous Fiber Dyeing Unit

The continuous dyeing or other processing of fibers, stock or staple can now be accomplished with a new piece of equipment developed by the General Dyestuff Corporation, 435 Hudson St, New York, N Y, according to late reports. The machine is said to be particularly effective in the application of vat and naphthol colors to rayon staple. The contact time of the entering material with the dye liquor is very short, affording high speed operation.

The machine, shown recently for the first time at the Charlotte, N C office of the company, has been under development since 1944. Introduced by Sumner H Williams, Southern Manager, it is expected that actual mill operation will soon be inaugurated. Mr Williams is also the inventor of the continuous operation piece goods machine unit which bears his name.

Wherever a process is involved for fairly short exposure of materials to treating solutions, this new machine is said to be suitable. Chemical treatment, dyeing and scouring of wool as well as all other fibers is reported to have been satisfactorily accomplished. It is envisioned by GDC that bonded fabrics, skeins, leather and skins can successfully be treated on such a machine and that even cotton warps may eventually be processed.

The machine is so constructed that the dyeing time can be varied mechanically from 30 to 90 seconds. In addition, with the incorporation of penetrants Nekal NS and Nekal BX High Conc, techniques have been developed which speed up the dyeing operation, the company states.

It is pointed out that since the principle of passing a large quantity of goods through a small dye bath (thus utilizing a low liquor ratio) is employed, considerable economy over batch operations is indicated by practical calculations (the bath in this first unit contains only 35 gallons). It is steam jacketed and fully insulated to insure low heat consumption. Also, power consumption is low.

By varying the speed and thickness of the laps or stocks being fed in, close control of fiber-to-bath exposure reportedly can be obtained. On the present 40" machine estimates place the capacity from 500 to 3000 pounds per hour based on top speed of 33 yards per minute and 1 to 2 pounds per yard on the conveyor belt.

Characteristically new is the endless chain-link belting of stainless steel. Goods enter in lap or stock form laid evenly on the mesh. As the belt goes over a roll to enter the bath vertically, a second belt is so synchronized as to sandwich the material between them, allowing the liquor to penetrate freely with no tension on the goods. On leaving the bath again vertically, the enmeshed material passes through a light draw-roll nip. As the mesh parts, the goods are drawn through a 5-ton nip and on to another endless belt which carries it under several sprays, which may utilize water or solutions of chemicals. A second spray treatment, identical with the first, follows. Finally, after being drawn through a 15-ton nip, the material is fed to an inspection apron and then by truck or belt to any further process units that may be required.

The design of this machine is such as to conventionally provide for chemical and dye feeds in the usual manner for continuous operation. The conveyers are variable tensionwise so that an allowance can be made for thickness of laps or stocks and for the various types of fibers.

Relative to dyeing procedure, General Dyestuff emphasizes three factors:

(1) *Close control of the time of exposure of the fiber to the bath.* This is exemplified in the vat dyeing of animal fibers where the exposure of highly injurious alkaline liquors over and above a critical time would be impossible. Helindon vats on wool were demonstrated to be applied easily;

(2) *Even lap and stock feed to insure even distribution of color;*

(3) *Feed should be thinly fed onto the moving mesh in order that washing can be quick and thorough on a fast run.*

Preliminary to a full scale run, the company states, as little as 0.5 pounds of stock may be put through and the results evaluated in less than 5 minutes; hence, a matching formula with little expenditure of time and materials.

Though the design is compact, requiring minimum floor space amounting to 17 x 6 feet for this unit, the machines can be used in series.

GDC lists the following operations, which they state can be carried out continuously:

Spun and staple rayon stock and rayon tow dyeing with all suitable classes of dyes.

Spun and staple Celanese dyeing with acetate colors.

Raw stock wool scouring.

Raw stock wool dyeing with vats.

Raw stock cotton dyeing from the bales with vats, naphthols, directs, and sulfur.

Orlon acrylic fiber dyeing with vat colors.

Spun and staple nylon with vats and acetate colors.

Nonwoven fabric dyeing with vats, naphthols, directs and sulfur.

With two machines already built, General Dyestuff Corporation reportedly plans to make the equipment generally available to the industry through the Morrison Machine Co, Paterson, New Jersey, whose collaboration was given during the long period of development.

• Atco Reports Interest High for Radioactive Detergent

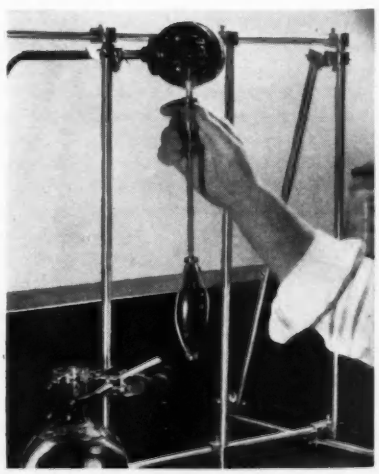
Since its introduction at the 1950 AATCC Convention in Portsmouth, N H, a mildly radioactive detergent developed by the Atlantic Chemical Co, Inc, Centredale 11, R I, has been the focal point of a great deal of interest, according to James C Shore, Atco technical director. Under experimental conditions at Portsmouth, washed pieces of fabrics were tested with a Geiger Counter for radioactivity.

Two other new Atco products, Antistatic N-30 (for synthetics and wools) and Atco Graphite Remover (for nylon lace) have also evoked considerable attention, it is reported.

• Umbrella Stirrer

A four-blade umbrella type stirrer, which can be closed to pass through the neck of a flask, and then opened for maximum stirring effectiveness, has been developed by the Fisher Scientific Company, 717 Forbes St, Pittsburgh 19, Pa as an answer to the problem of inserting 4-inch stirrer-propellors through narrow-necked flasks and similar vessels.

The Umbrella Stirrer, patented by Dr Morris Graff of the National Cancer Institute, is said to speed up dissolving action, preparation of slurries, mixing of emulsions, etc, and to be particularly valuable for use with a 3-neck flask when a minimum of exposure to air is desirable. The 12-inch shaft of the stirrer fits into chucks of motor devices accommodating ¼-inch rods. All parts are made of stainless steel. The blades can be twisted while within the flask so that a wide variety of shearing actions is provided.



Fisher Umbrella Stirrer

• Ball Bearing Turntable for Cloth Trucks

Birch Brothers, Inc, Somerville, Mass, are offering a new Ball Bearing Turntable for Cloth Trucks, especially designed for use in range with scutchers or cloth openers so that the cloth truck may be easily turned to eliminate excessive twist. The turntable is said to be of rugged construction and reportedly turns very freely.

• Continuous Shrinking Range

The James Hunter Machine Company, North Adams, Mass, has announced a new London type shrinking unit called the Unishrink Continuous Shrinking Range, employing a horizontal conveyor which carries the cloth in a completely tensionless position.

The range can be operated by one man. A patented airflow feature is utilized for drying purposes. Reports state that 4-10% shrinkage can be obtained in the warp with a minimum width shrinkage at continuous speeds from 15-50 ypm, depending on the weight of fabric; also, the steam consumption for average production of 40 ypm on 14- to 50-ounce worsteds is less than half than that on the old dryer, which was operated at less than 20 ypm.

New features include Mecco guides for automatically guiding the cloth to the wetting-out tank. The new steam box is said to give improved penetration. A double compartment tank is supplied so that two types of finishes, either cold water or resin, can be run at the same time without completely exhausting the bath. The bottom idler rolls may be raised for ease in threading, and also to lift the cloth out of the chemical if the dryer is stopped. A special Hunter Leyland-Mycock expander removes all wrinkles and double edges before the cloth enters the Hunter squeeze rolls. A new style rotary flock brush clears the top roll of flock. A special compensating gate, with hydraulic Reeves, controls the cloth tension between wetting-out tank, squeeze rolls and dryer. The dryer is furnished either with a folder, complete with static eliminator or a roll-up device as shown in the illustration.

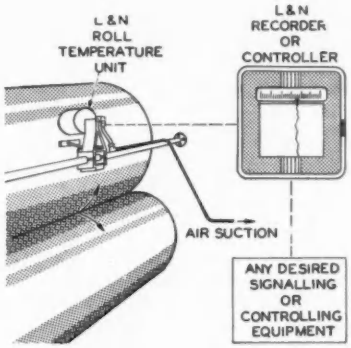
• Roll Surface Temperature Unit

A new Roll Surface Temperature Unit developed by Leeds & Northrup Co, 4934 Stenton Ave, Philadelphia 44, Pa, measures temperature of a moving roll surface without touching the roll. Because of unique design, it reportedly cannot scratch, score, or in any way destroy delicate surface films. Temperature detected by the Unit is recorded automatically by either a Micromax or Speedomax instrument supplied as an integral part of the complete equipment. The recorder can be equipped to operate signals or controls.

Applicable to roll diameters down to 9" and to flat surfaces, the new detecting unit operates independently of surface speed, emission characteristics, and finish. It can be mounted at the center of the roll or at any other location, wherever actual temperature measurement is desired.

This new primary element works on the principle that a moving object carries with it a thin, closely adhering layer of air nearly the same temperature as the moving surface. Mounted 1-32nd of an inch from the surface is a measuring head, contoured to fit the roll. A continuous stream of air is sucked past the measuring element and thus heats it to virtually the same temperature as the roll surface.

Although recorded temperature is a few degrees lower than true surface temperature, the difference remains substantially constant and is reported to be negligible in process control (—4 F or less). The Unit is said to provide temperature measurements well within limits of industrial requirements. Air suction rate and surface speed are noncritical over wide limits, the manufacturer states, and measurements are not appreciably affected by ambient temperature.

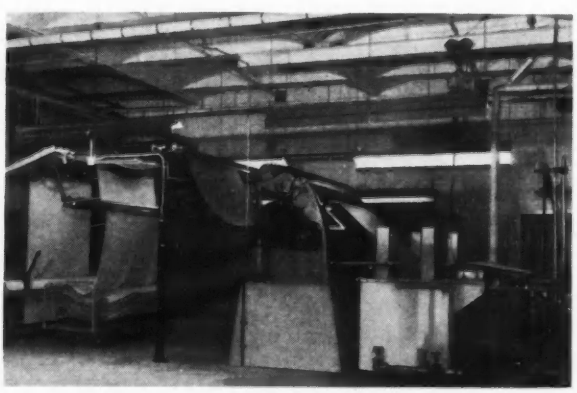


L & N Roll Surface Temperature Unit

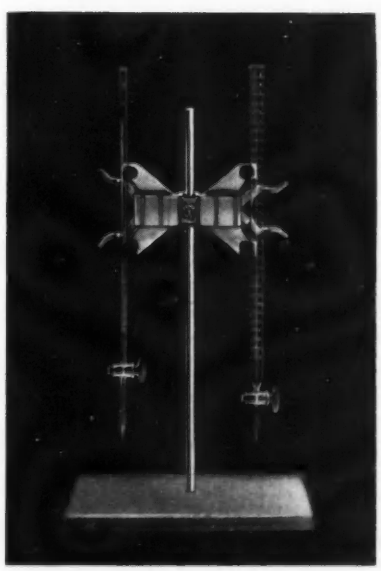
A compound joint with spacing slide is used to position the measuring head concentric with the roll and at proper spacing. Should material adhere to the roll surface, a safety bumper retracts the measuring head. The Unit can also be supplied with a safety switch which operates in conjunction with this retracting device. This safety actuates a bell, horn, or light to signal the operator and freezes the control until the measuring head is reset.

• Double Burette Holder

A lightweight double burette holder of cast aluminum alloy (less than half cast



Unishrink Continuous Shrinking Range



Alumaloy Double Burette Holder

zinc) has been added to Alumaloy's line of laboratory clamps (Laboratory Industries Incorporated, 4710 West North Avenue, Chicago 39, Ill). Tensile strength is reported at 45,000 psi and the manufacturer states that any size burette from micro to 100 ml capacity may be accommodated.

A 5.5 lb. white porcelain base, designed to permit greater color discrimination during titrations, is reported impervious to all reagents. A corro-sist treated, aluminum support rod and independently operated holding arms are additional features. The holder reportedly does not obscure graduation lines, numbers or the meniscus level on the burettes. Release of the burette is obtained by means of applied pressure from the thumb and forefinger.

Request descriptive literature DBH.

TECHNICAL LITERATURE

Gycolan Dyestuffs—Color Card #334, Geigy Company, Inc, 89-91 Barclay St, New York 8, N Y—illustrates a full line of dyeings and contains the dyeing methods and fastness tables for the Gycolans, metallized dyestuffs for woolen and worsted piece goods and yarn. The Gycolans are said to combine the application simplicity of the level dyeing acid colors and the fastness properties of the Erio Chrome and Erio Chromal series. Geigy states that the light fastness and the fastness to washing and perspiration generally are superior to the acid colors, while the leveling and penetration are superior to the Chrome series on closely woven fabrics or tightly spun yarns. Reportedly, carbonized wool or piece goods need not be neutralized before dyeing is done with the Gycolan colors.

In addition to the self shades, the card includes illustrations and formulas to serve as guides in the production of fashion shades under "Combinations." Auxiliary products for wool processing are also described.

Solophenyl Dyestuffs—Color Card #335, Geigy Company, Inc, 89-91 Barclay St, New York 8, N Y—contains the method of application for Solophenyl colors; fastness tables and a full line display of dyeings on cotton and spun rayon. Also included is a summary of Geigy textile auxiliaries for the preparation, dyeing and processing of cellulosic fibers.

Geigy applies the name Solophenyl to what they consider the fastest to light substantive colors. The series is said to have met all demands for light fastness in automotive fabrics, upholstery cloths, draperies and outerwear. In addition to their superior light fastness, certain colors in the series reportedly possess greater fastness to washing and perspiration than is found in the average direct color.

Solophenyl colors are desirable for the dyeing of cellulosic fibers at all stages of processing, Geigy states, especially on cotton, filament and staple viscose and Bemberg rayons.

Diazophenyl Red S5B—Bulletin #28-G, Geigy Company, Inc, 89-91 Barclay St, New York 8, N Y—dyeing procedures, characteristics, fastness properties and mounted samples of this new addition to Geigy's Developed Color Line. (See "New Products" Section.)

"Industrial Control" for Temperature, Flow, Pressure, Liquid Level and Humidity—Catalog 8304, Minneapolis-Honeywell Regulator Company Industrial Division, Wayne and Windrim Aves, Philadelphia 44, Pa—This 60-page catalog presents over 100 different models of non-indicating electric, electronic, and pneumatic controllers.

A number of important additions to the previous line are shown. Among them are electronic, electric, and pneumatic insertion type temperature controllers; magnetic starters and contactors; heavy-duty pneumatic positioning motors; pneumatic automatic reset relays, and both pneumatic and electric step controllers.

Available on request.

"The Story of Surface Coatings Based on Vinylite Resins"—Bakelite Company, Department 1503, 300 Madison Avenue, New York 17, N Y—a 28-page booklet describing protective and decorative coatings for a variety of surfaces. Essential applications of the coatings are discussed and illustrated.

The booklet shows how the Vinylite resin-based coatings stand up under severe exposure (such as to sulfuric acid). Actual cases of savings made possible through use of the coatings against destructive forces such as weather abrasion, moisture, chemical attack and rust are cited.

Various techniques of application such as spraying, brushing, roller and knife coating, and dip coatings to which surface coatings based on these resins are suitable are discussed.

Although Bakelite Company supplies only the raw materials for producing these coatings and does not produce the finished paints, this booklet is offered as a service to its customers whose names are available on request.

Eastman Industrial Catalog, 1951 Edition—Tennessee Eastman Company Division, Eastman Kodak Company, Kingsport, Tenn—includes specifications, properties and typical uses of 55 industrial chemicals manufactured by the company including sodium cellulose sulfate, the new water soluble cellulosic announced during 1950.

Of particular interest is the inclusion of solubility data for 20 of the 23 Eastman aromatic compounds.

An addition to the new addition is a two page chart listing those fields in which each of the industrial chemicals finds use.

Copies available on request.

"Corson-Cerveny Micro-Bellows Pump"—Research Appliance Co, Box 413, West View Road, Pittsburgh 9, Pa—illustrations and complete information on a new all stainless steel metering pump. Descriptive material and data are included on construction, operation capacity, electrical requirements, corrosion resistance, maintenance and repair, applications and parts. Also included is a special section on the bellows.

Available on request.

"Zero Hardness by Amberlite Deionization"—Rohm & Haas Co, Washington Square, Philadelphia 5, Pa—a four-page, two-color folder designed to help the power plant engineer and the chemical engineer evaluate the usefulness, application and layout of ion exchange systems for soft, carbon dioxide- and silica-free water. Chief emphasis in the bulletin is on silica removal.

The text explains what results may be expected from Amberlite Monobed (single bed) as well as multiple-bed systems, describes how deionization works, and suggests typical uses in the process and power industries. A full page, illustrated with block diagrams, presents case histories with results attained in deionization by typical Amberlite Monobed, two-, three- and four-bed systems.

Available on request.

Fabrics, Trimmings & Supplies Directory—Fairchild Publications, Inc, 7 East 12th Street, New York 3, New York—a directory listing manufacturers, dyers, printers, finishers and selling agents in the New York metropolitan area within the following categories: woolen and worsteds, woolen and worsted mills, pile fabrics, cottons, rayons and silks, wet processing, knitted fabrics, trimmings, laces and embroideries and supplies.

Listings are alphabetical under the above categories, and are complete with address and telephone number.

PREPAR

Things

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¼ oz. to ½ oz. Sodium Hydrosulfite

The maximum temperature should not exceed 120°F. During the dyeing period, salt is added to increase the color yield. When the dyeing period is at an end, the dyed material is rinsed, oxidized and thoroughly acidified and scoured with a synthetic detergent. *Trade-mark

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Calco Soluble Vat Scarlet HB should be tried in order to appreciate its good properties. Ask your Calco representative for a sample.

For the Textile Bookshelf

Vat Dyeing of Wool: Second Printing (Calco Technical Bulletin #797). Describes the new process for the application of the complete line of Indigoid and Anthraquinone Vat Dyes to certain types of wool materials.

Studies of Wool Dyeing: The Influence of the Cuticle in the Dyeing of the Wool Fiber by H. E. Millson and L. H. Turl (Calco Technical Bulletin #817). Report of important experiment revealing that the rate and degree of dye penetration are influenced by the character of both cuticle and cortex as well as of the dye itself.

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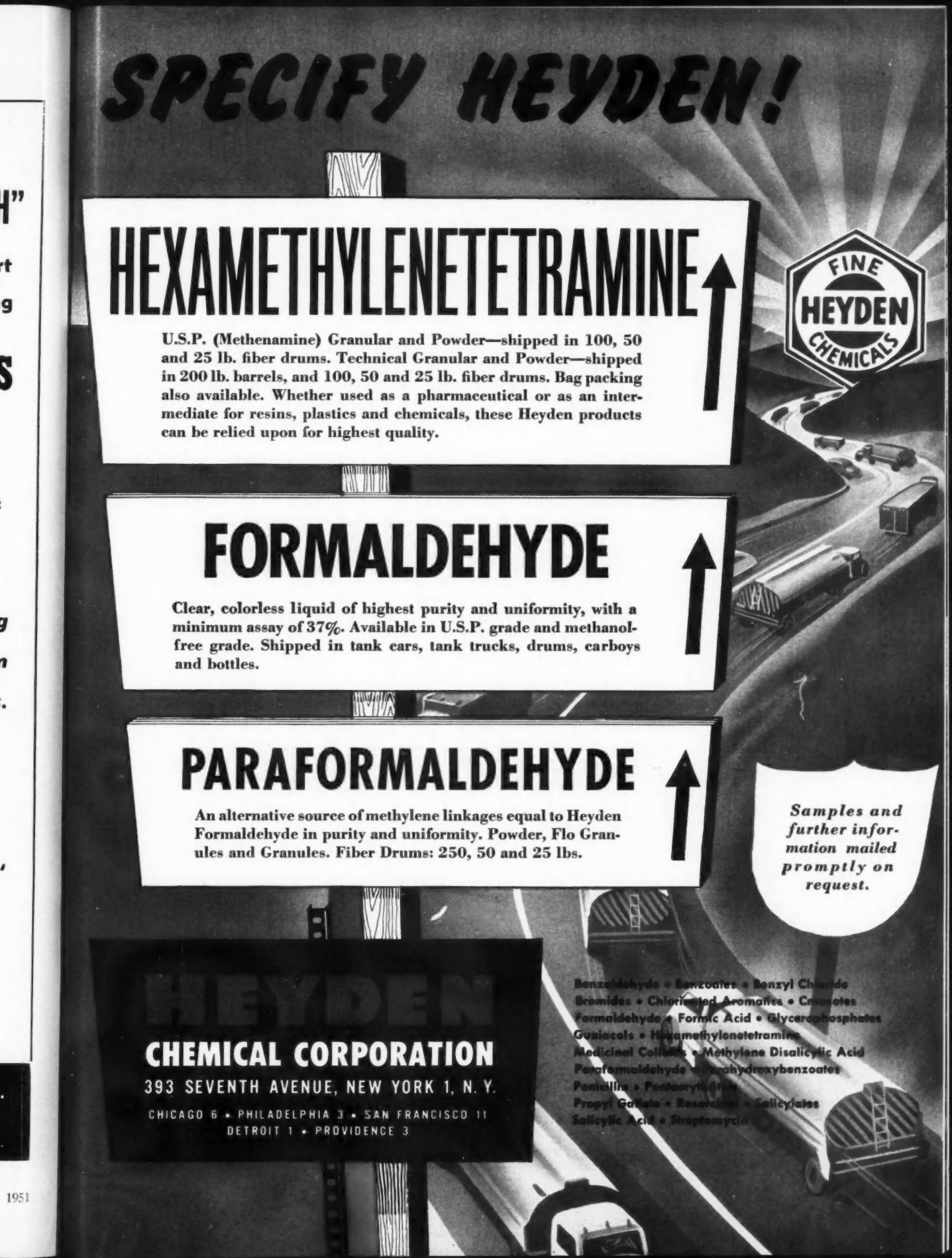
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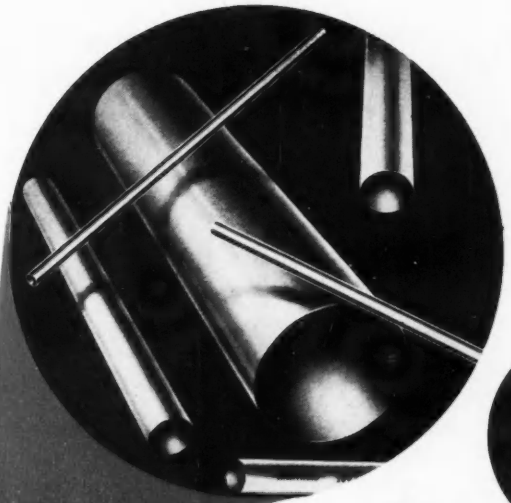

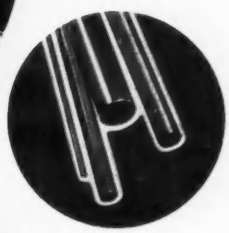

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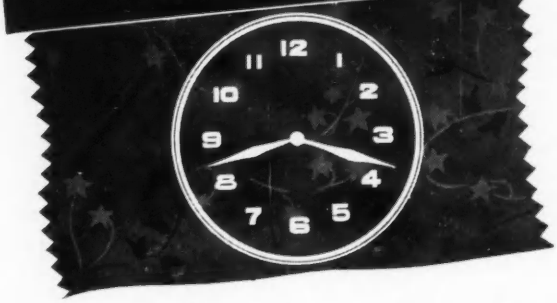

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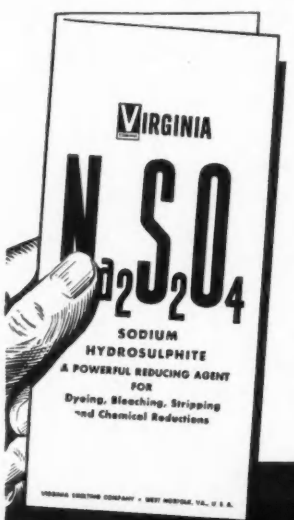

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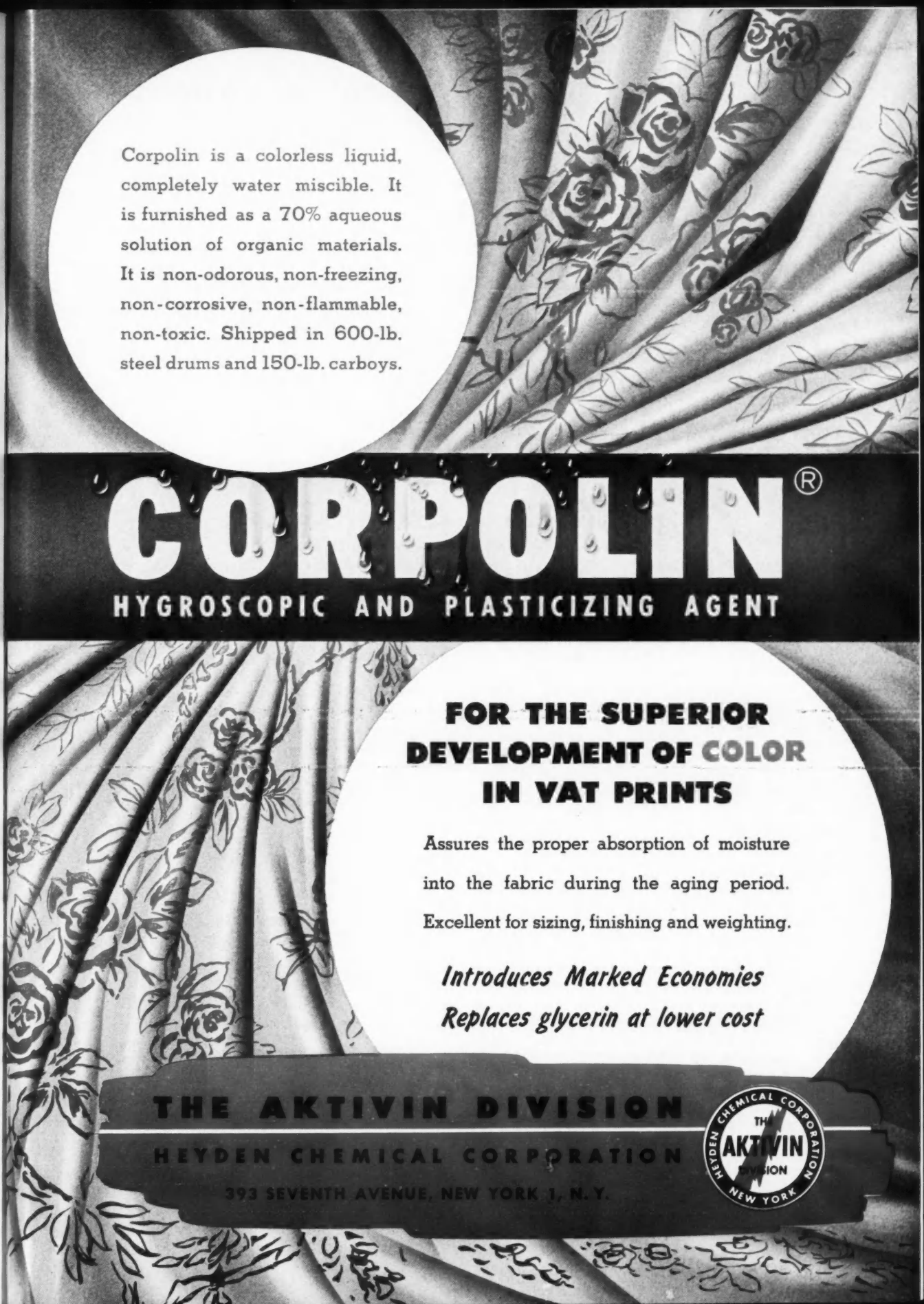
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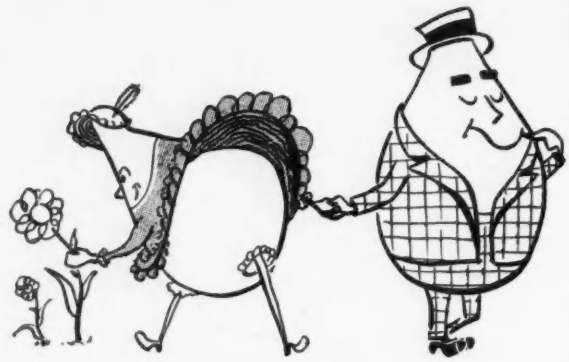

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Pfister Chemical Works, Inc.	
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Prufcoat Laboratories, Inc.	
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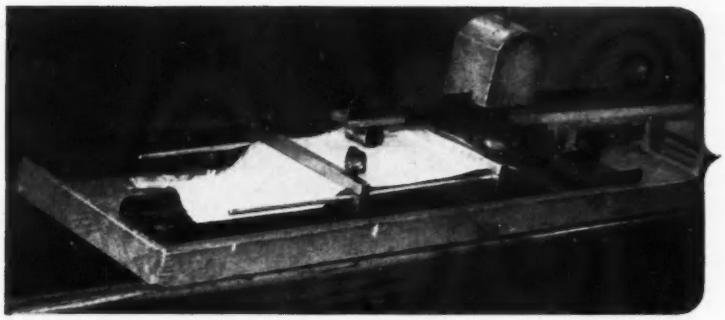

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